

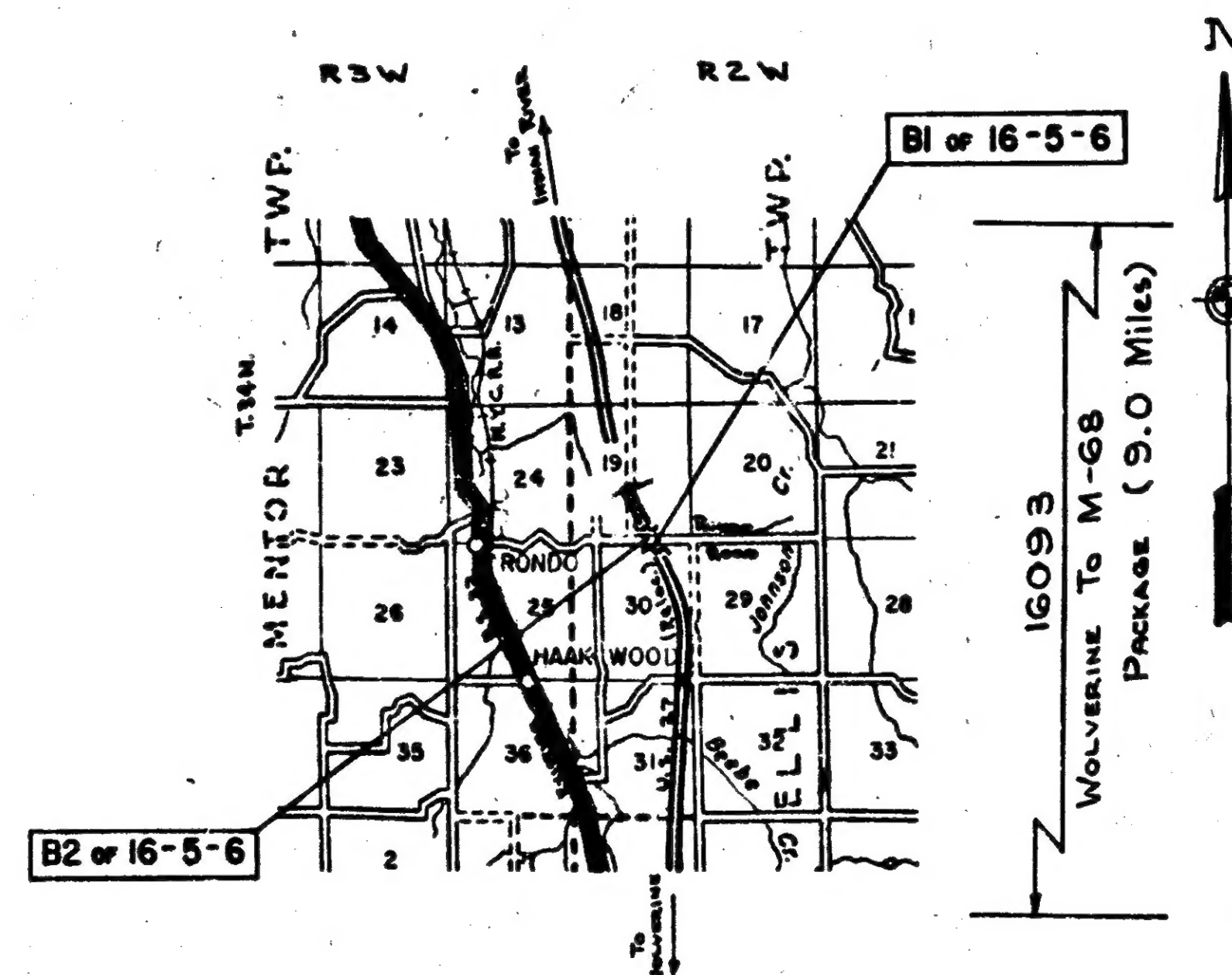
MICHIGAN STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE
STATE HIGHWAY COMMISSIONER

PLANS OF PROPOSED BRIDGES MICHIGAN PROJECT I-75-4 (20) 293 GRAYLING - INDIAN RIVER ROAD CHEBOYGAN COUNTY ELLIS TOWNSHIP

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL PLAN OF SITE
3	GENERAL PLAN OF STRUCTURE
4	BILL OF MATERIAL
5	ABUTMENT DETAILS
6	PIER DETAILS
7	SUPERSTRUCTURE DETAILS
8	SUPERSTRUCTURE DETAILS
9	SUPERSTRUCTURE DETAILS
10	SUPERSTRUCTURE DETAILS
11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS

2	GENERAL PLAN OF SITE
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11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS
RIOM	ALUMINUM RAILING, DRAIN CASTING, BAR CHAIN MOLDING AND BEVEL DETAILS



GENERAL NOTES

Except where otherwise indicated on these Plans or in the Proposal and Supplemental Specifications contained therein, all materials and workmanship shall be in accordance with the Michigan State Highway Department's Standard Specifications for Road and Bridge Construction, 1960 Edition.

The design of this structure is based on the Michigan State Highway Department's Specifications for the design of Highway Bridges, 1958 Edition, HS-44 Loading, Live load plus impact deflection = 1/800 of span length.

The character of all materials and the extent thereof as shown by borings has been obtained by methods and from sources believed to be reliable. The exactness of this information is, however, in no case guaranteed. Boring samples are on file in the Design Office at Lansing and are available for inspection.

All exposed concrete corners shown square on the Plans shall be beveled with 1/2" triangular moldings except as otherwise noted.

The stationing as shown on these plans for the intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) is believed to be correct. It shall, however, be checked at time of starting construction and if the stationing shown on the plans is incorrect it shall be reported to the Design Office at Lansing and the structure shall be staked out using the actual intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) as the control point.

NOTE:
Where the following items are called for on the Plans, they are to be constructed according to the Standard Plan given below opposite each item, unless otherwise indicated.

STANDARD PLANS TO BE PRINTED

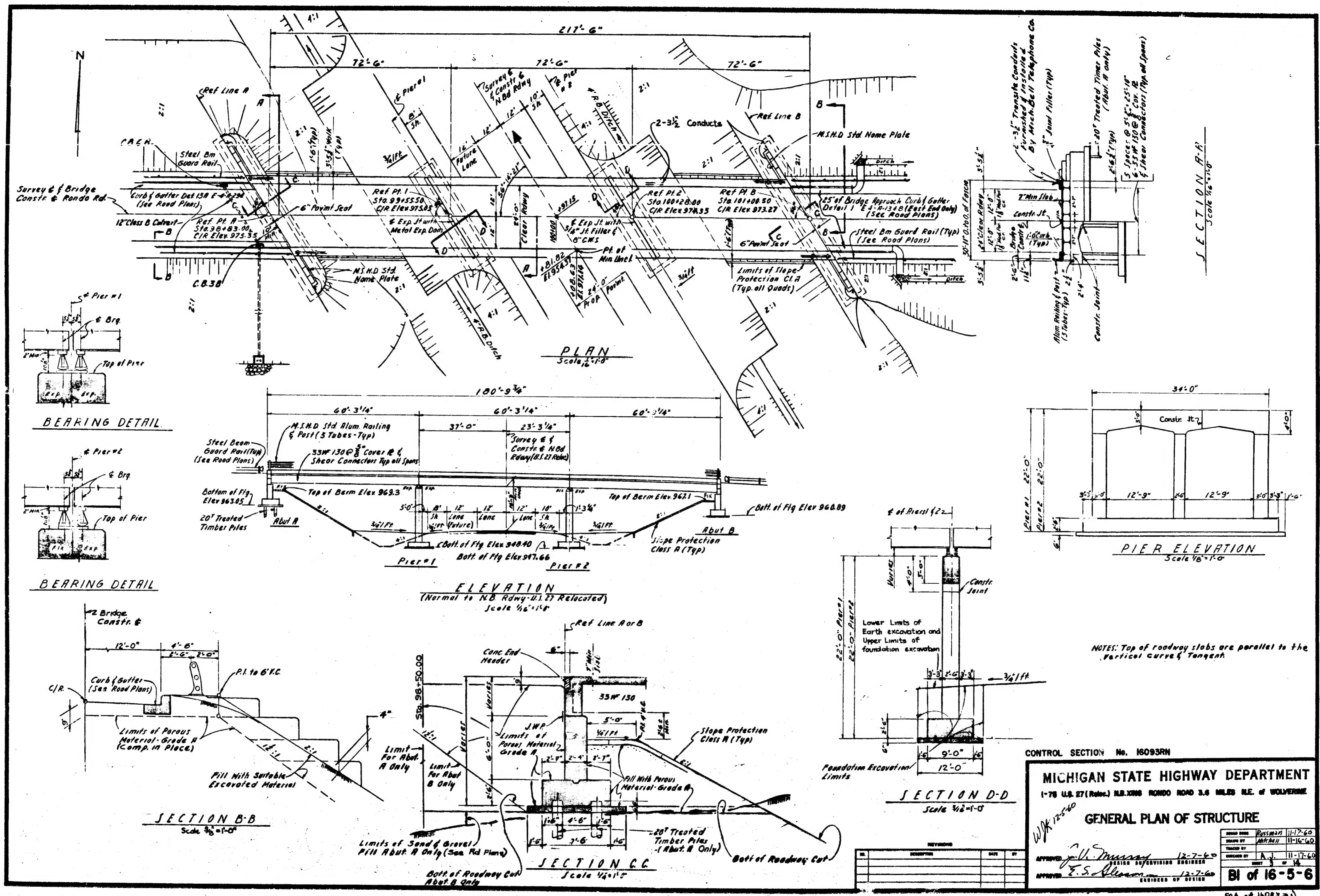
SHEET NO.	TITLE
SP2D	STANDARD SLOPE PAVING DETAILS

STANDARD PLANS NOT TO BE PRINTED

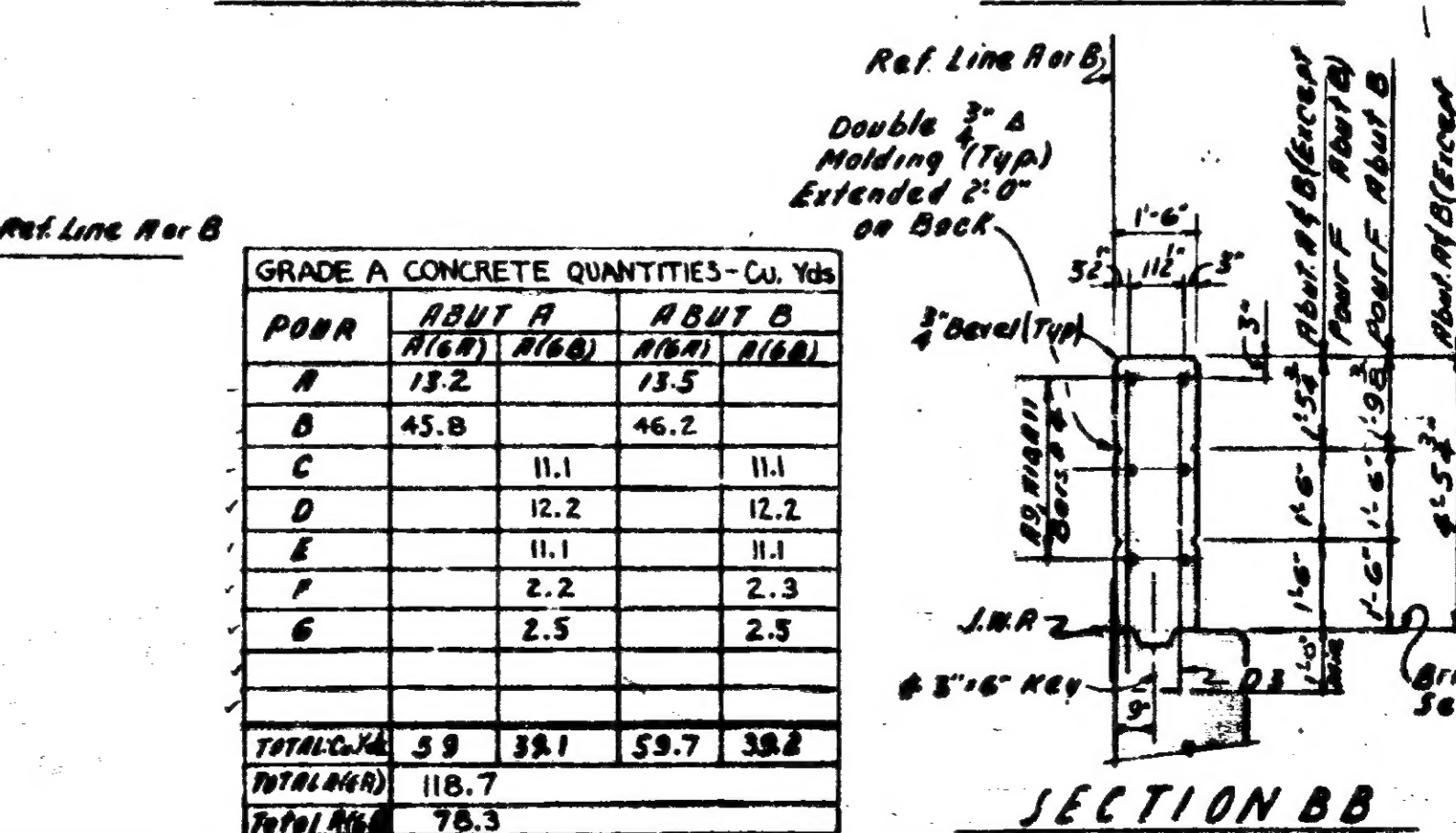
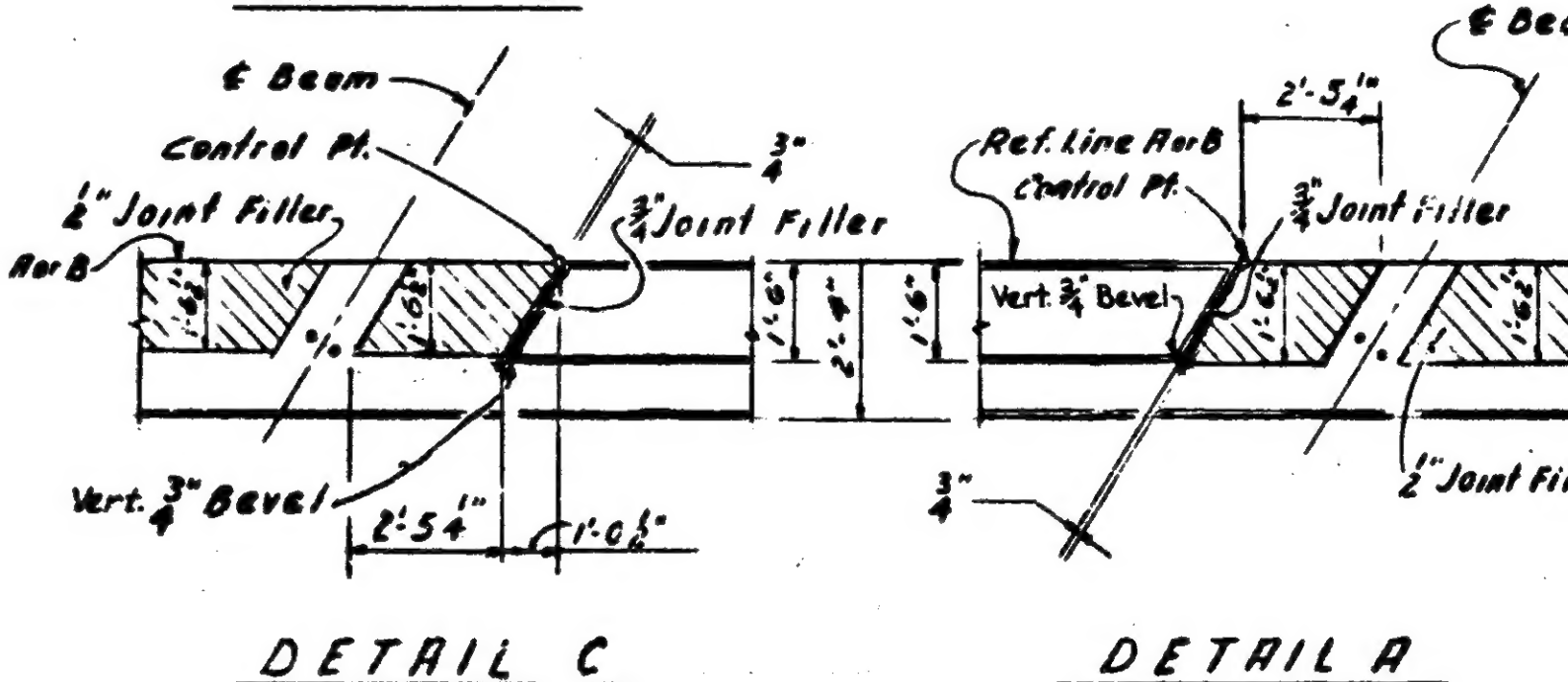
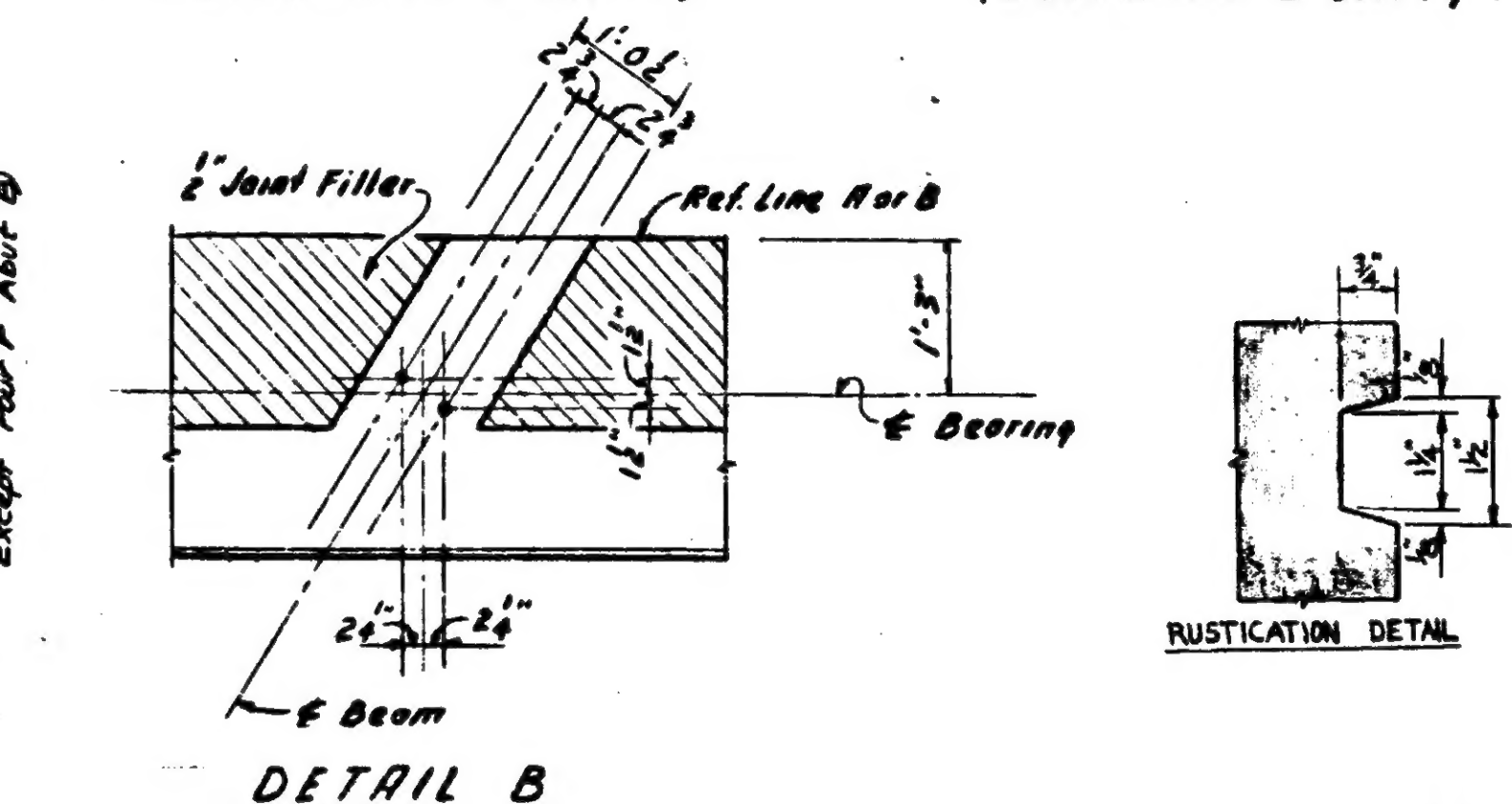
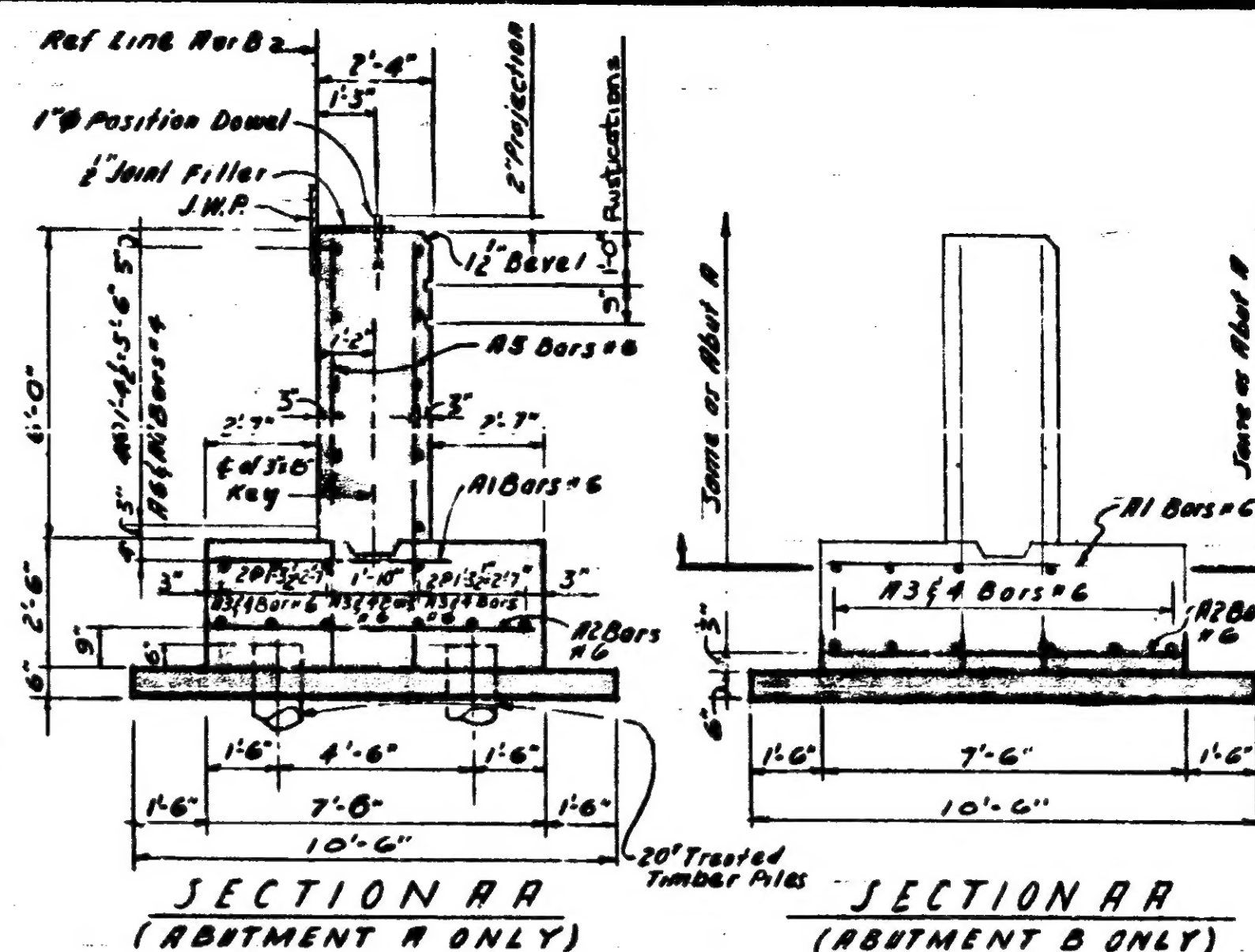
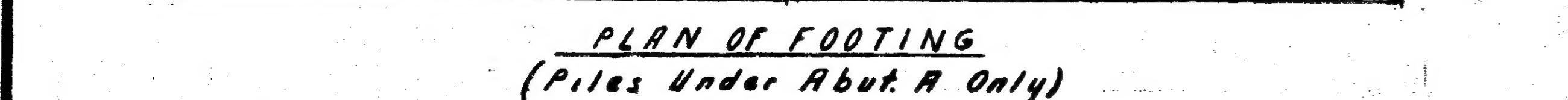
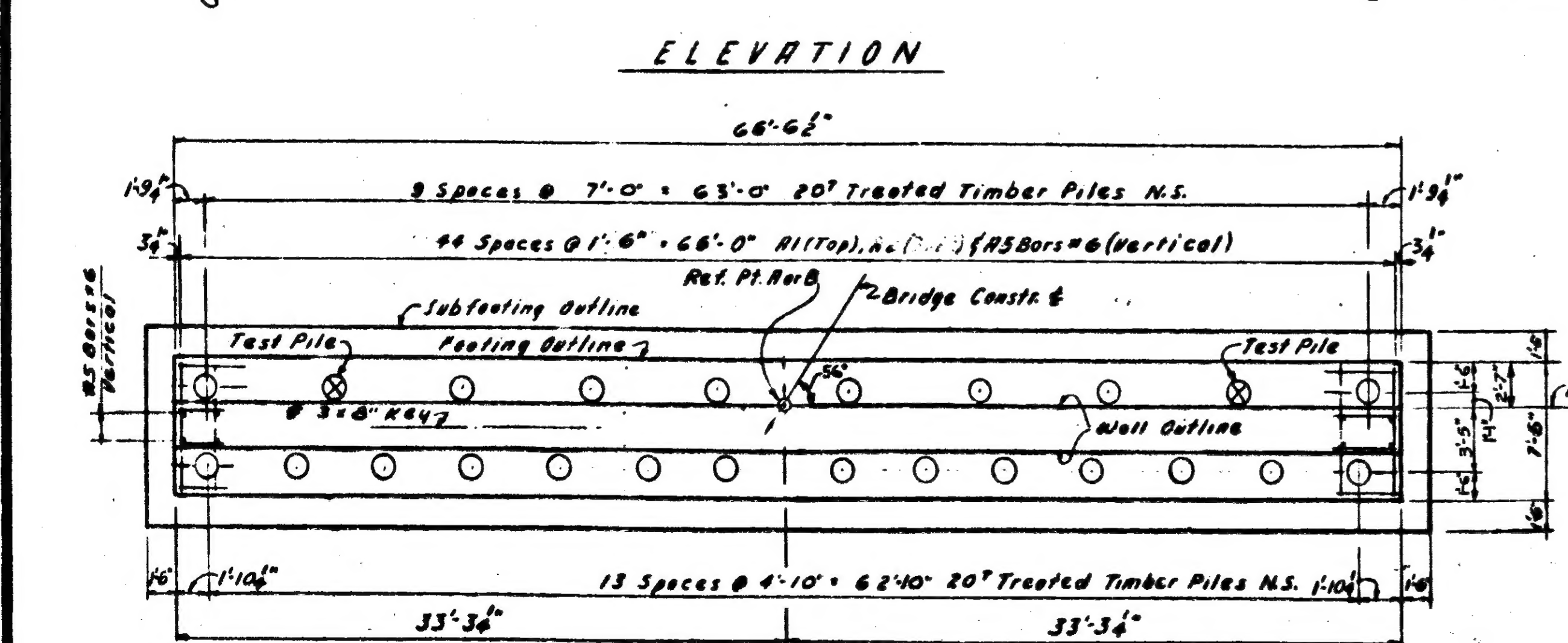
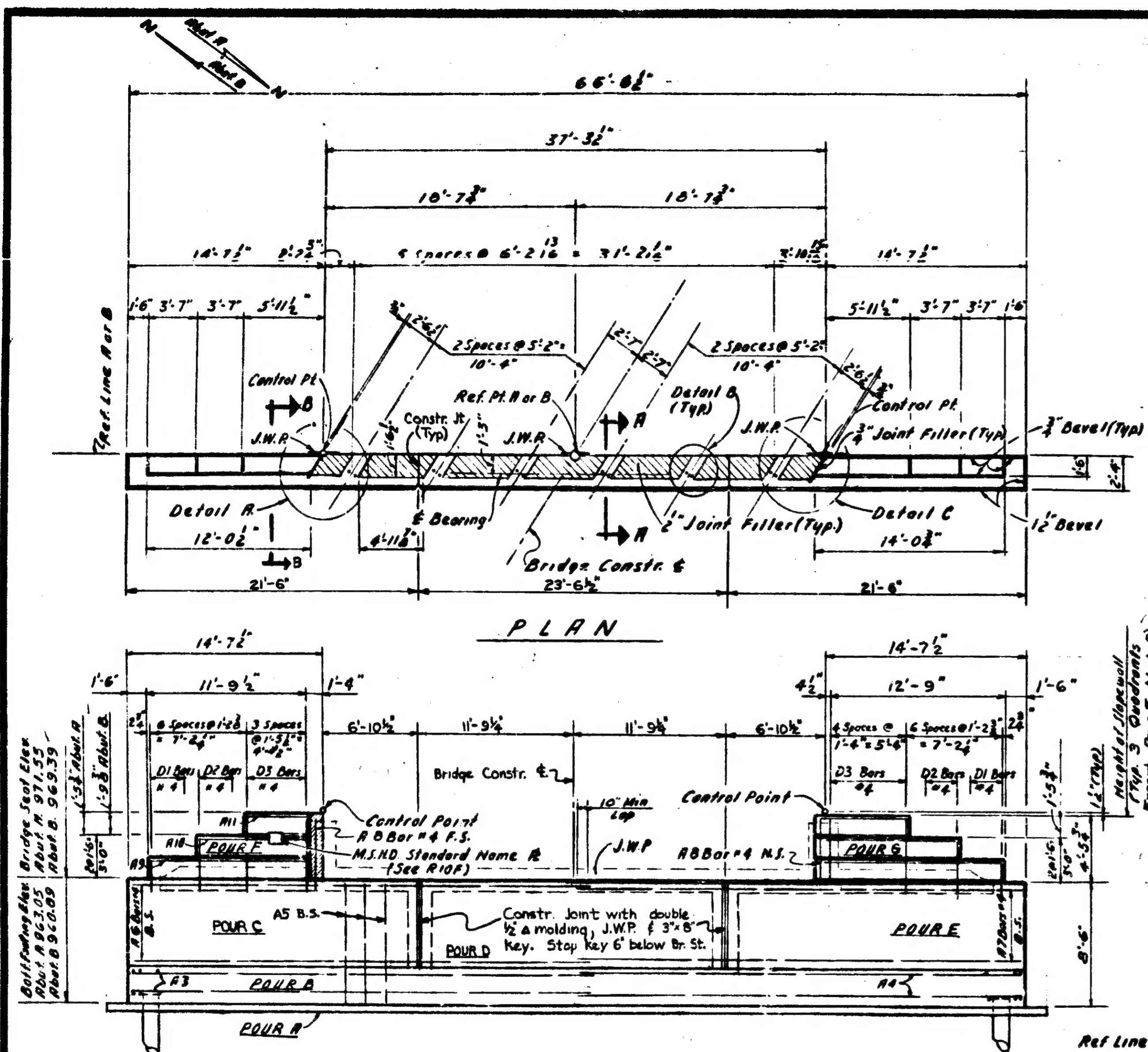
SHEET NO.	TITLE

CONTROL SECTION NO. 16093M	
CONTRACT FOR G & DS, Surf. & Strs.	
DIVISION APPROVAL	
CHECKED	DATE
RECOMMENDED FOR APPROVAL	DATE
RECOMMENDED FOR APPROVAL	DATE
OFFICES OF DESIGN AND CONSTRUCTION	
APPROVED	DATE
APPROVED	DATE
STATE HIGHWAY DEPARTMENT APPROVAL	
APPROVED	DATE
BY	DATE
PLANS PREPARED BY	
MICHIGAN STATE HIGHWAY DEPT.	
DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS	
APPROVED	
DATE	

FILE NO. 16093M
B1 & B2 of 16-5-G



ITEM	UNIT	QUANTITY	DATE					Totals	PLAN EXTRAS				
			A	B	C	D	E		DATE	DESCRIPTION	UNIT	QUANTITY	
			8/7/61	8/7/61	10/31/61	2/4/63	2/4/63		2/4/62	02001, AUTH. F. EARTH EXCAVATION	Cu Yds	ESTIMATE	FINAL
													568
BRIDGE													
Earth Excavation	Cu. Yds.	18					-15					0	
Unclassified Excavation	Cu. Yds.	220		+18								238	
Treated Timber Pile-Furnished	Lin. Ft.	784	-154									630	
Treated Timber Pile-Driven	Lin. Ft.	720	-174.8									545.2	
Cutoff-Treated Timber Pile	Each	24										24	
Treated Timber Test Pile	Each	2										2	
Grade A (GA) Concrete-Substructure	Cu. Yds.	205.7										205.7	
Grade A (GB) Concrete-Substructure	Cu. Yds.	125.8										125.8	
Grade A (GB) Concrete-Superstructure	Cu. Yds.	228.1			+9.2							237.3	
Cement	Bbls.	800				+24						824	
Steel Reinforcement	Lbs.	63,644										63,644	
Structural Steel Fabrication & Erection	Lbs.	207,700	+551									208,251	
Shear Connectors	Lump Sum	L.S.										L.S.	
1/2" Joint Filler	Sq. Ft.	92										92	
3/4" Joint Filler	Sq. Ft.	61										61	
Hot-Poured Rubber-Asphalt Type Filler	Lin. Ft.	74										74	
Joint Waterproofing	Sq. Ft.	280										280	
Copper	Lbs.	180										180	
Aluminum Bridge Rating-Fabrication & Erection (31lbs)	Lin. Ft.	435										435	
Field Painting	Lump Sum	L.S.										L.S.	
Slope Protection Class A	Sq. Yds.	250			+46							296	
Porous Material Grade A (Comp. in Place)	Cu. Yds.	1510				-553						957	
Balanced by A.J. 5/29/63 CKD-F.O.C.-5/29/63													
MICHIGAN STATE HIGHWAY DEPARTMENT													
BILL OF MATERIAL													
FORM 800 DESIGNED BY CHECKED BY DATE 8/1/62 A.J. 12-2-62 4 of 14 B1 of 16-5-6													



QUANTITY TREATED		TIMBER PILES						
LOCATION	TYPE	NO RODS	EACH PILE			TOTAL		CUT OF ELEVATION
			Perin Lin. Ft.	Overin Lin. Ft.	Cut Off Each	Perin Lin. Ft.	Overin Lin. Ft.	
ABUT A	○ Vert	22	32	30	1	704	660	963.5
	⊗ Test	2	40	30	1	80	60	963.5
	Total	24				784	720	24

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	AMOUNT		Total lbs
		Amount A	Amount B	
Joint Water proofing	Sq Ft	140	140	2800
1/2" Joint Filler	Sq Ft	45.9	45.9	92
3/4" Joint Filler	Sq Ft	16.7	16.7	33

NOTES:

Abutments are similar except where noted

J.W.R. denotes joint waterproofing

N.S. denotes neerside

F.S. denotes forside

B.S. denotes bothsides

Slope walls are to be cast after
superstructure is complete to top of sidewalk

Positive dowels shall be set accurately to a template.

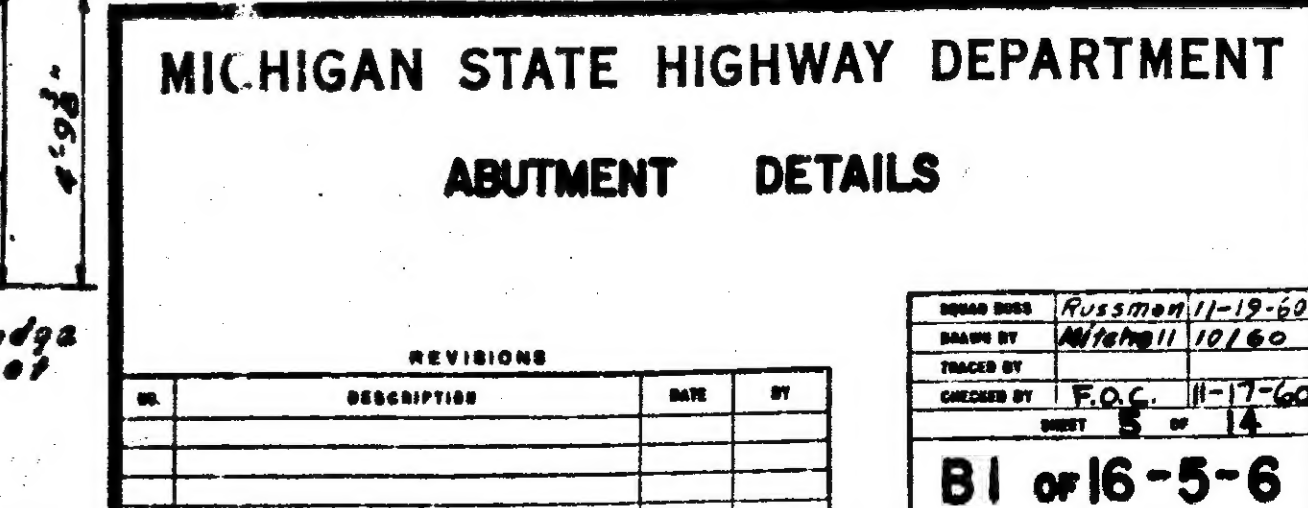
The bridge seal shall be finished to a true plane of the
elevation shown and shall not vary more than $\frac{1}{8}$ " under
a ten foot straight edge (not more than $\frac{1}{16}$ " under any
bearing).

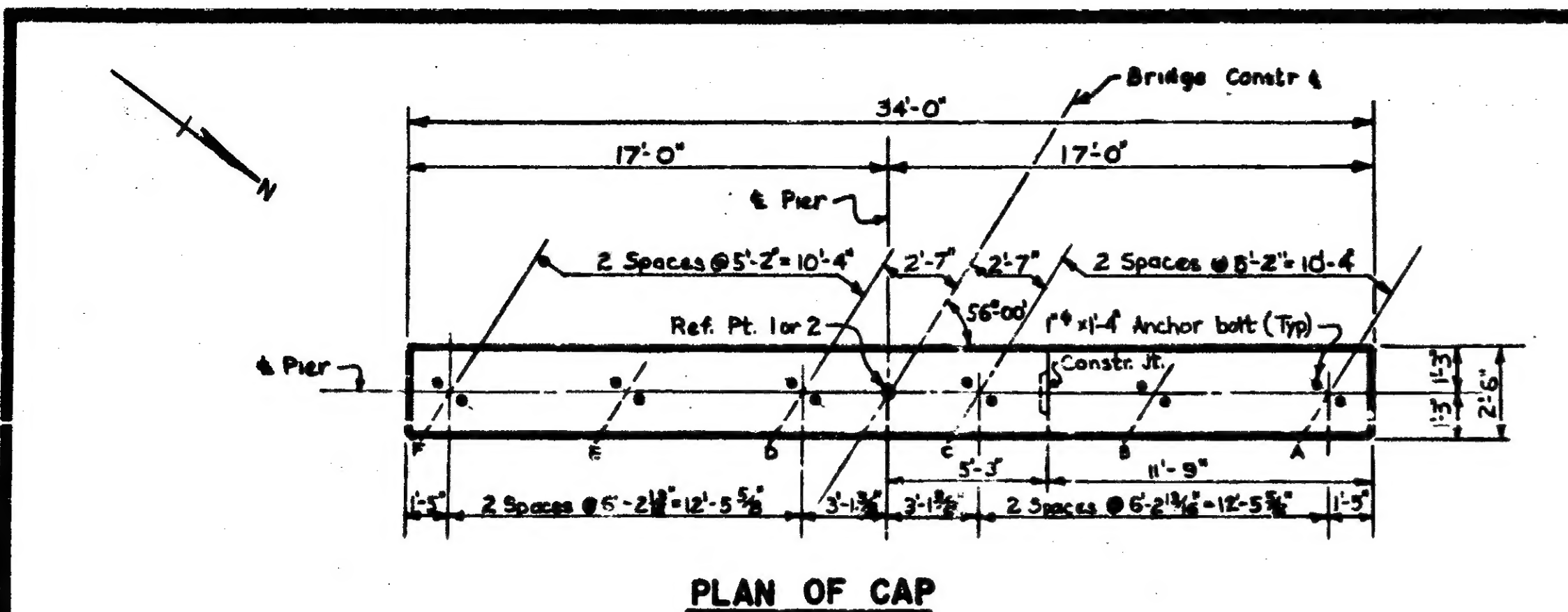
All piles shall be driven to a minimum bearing capacity
of 20 tons

For detail of molding details, see sheet # R10

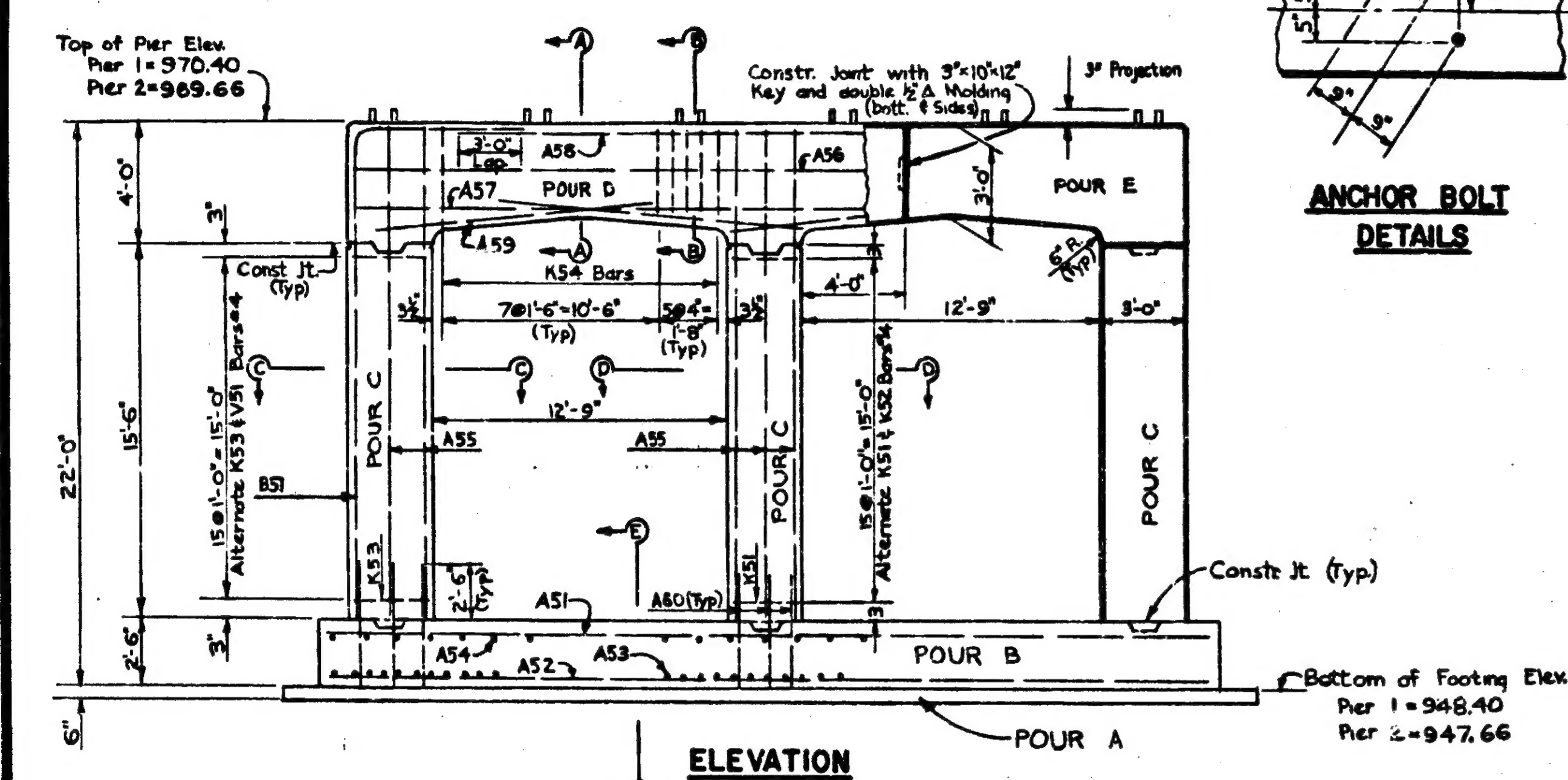
This design is based on a maximum foundation pressure of
2400 pounds per square foot and a maximum average
foundation pressure of 1750 pounds per square foot
for Abut B only.

GRADE A CONCRETE QUANTITIES- Cu. Yds.				
FOUR	ABOUT A		ABOUT B	
	A164	A166	A164	A166
A	13.2		13.5	
B	45.8		46.2	
C		11.1		11.1
D		12.2		12.2
E		11.1		11.1
F		2.2		2.3
G		2.5		2.5
TOTAL Cu. Yds.	59	58.1	59.7	58.6
TOTAL A164	118.7			
TOTAL A166	78.3			

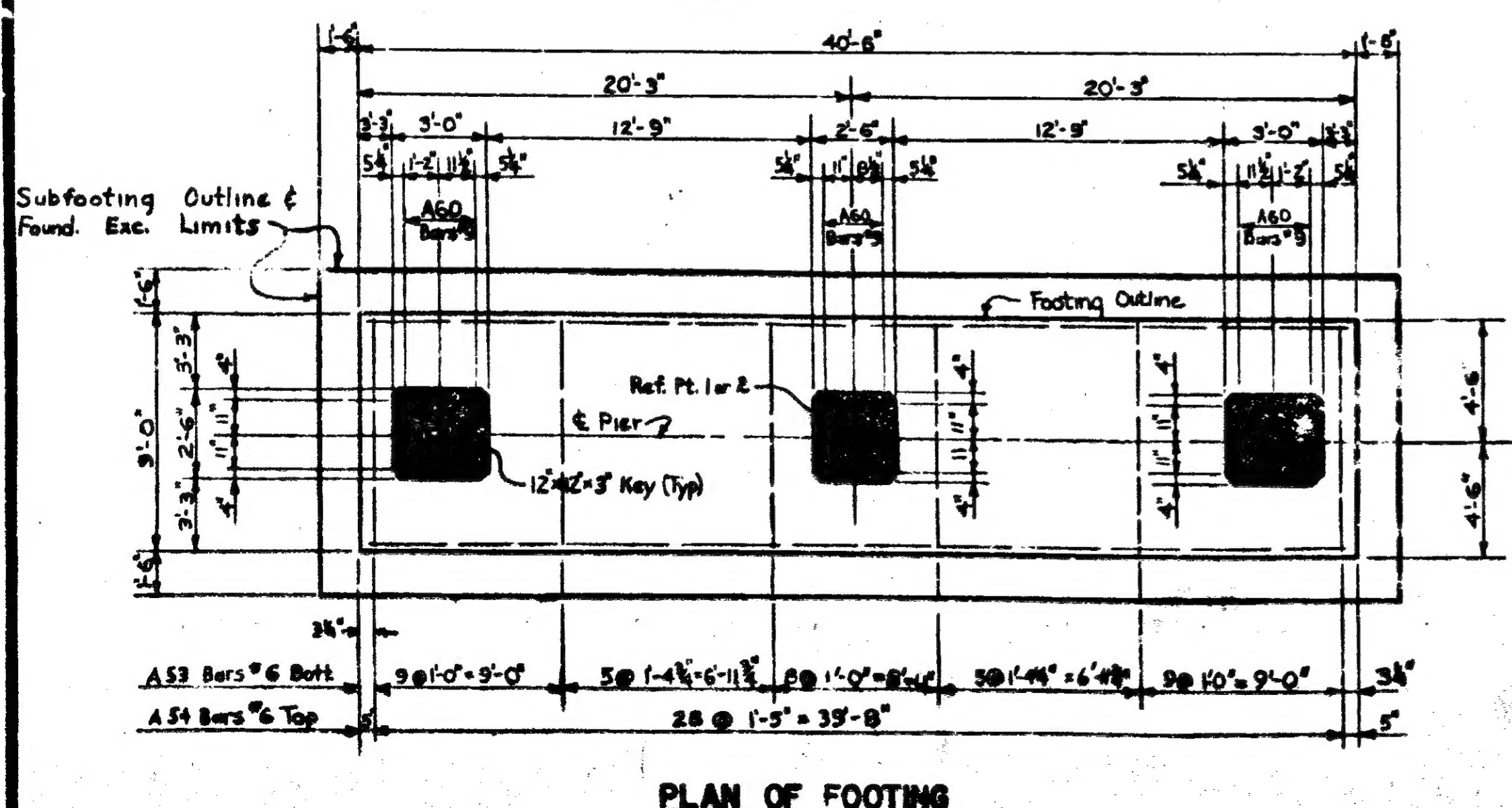




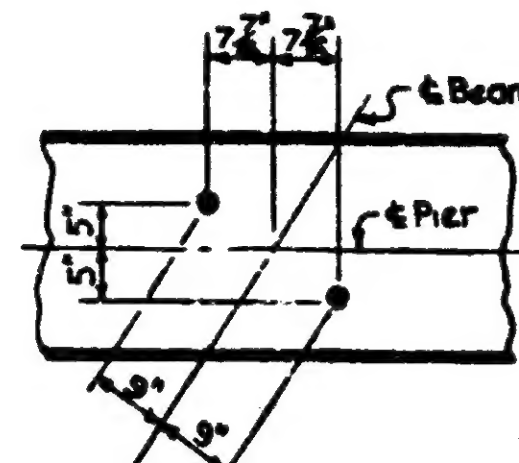
PLAN OF CAP



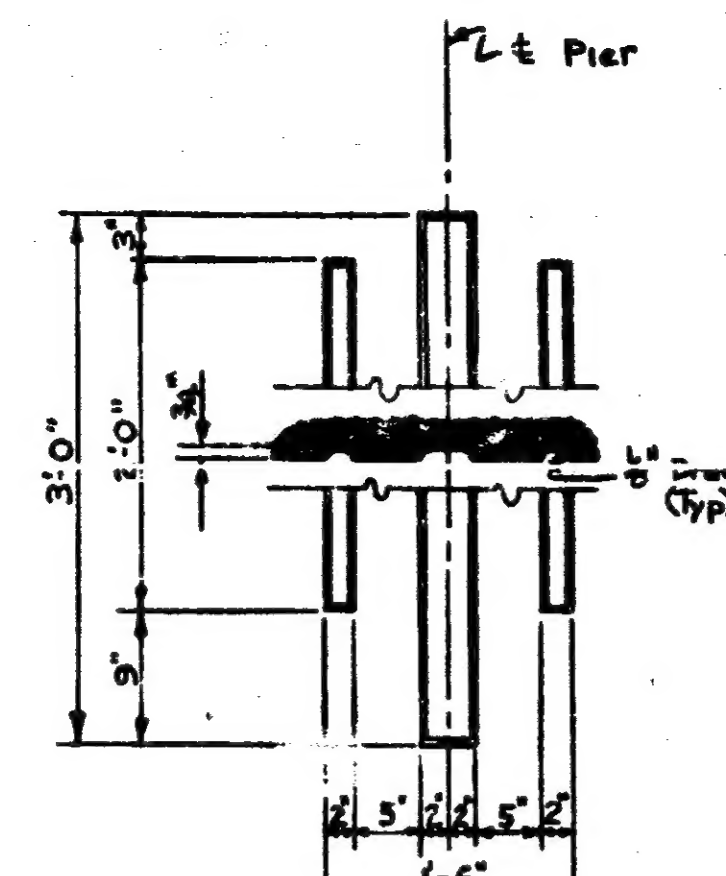
ELEVATION



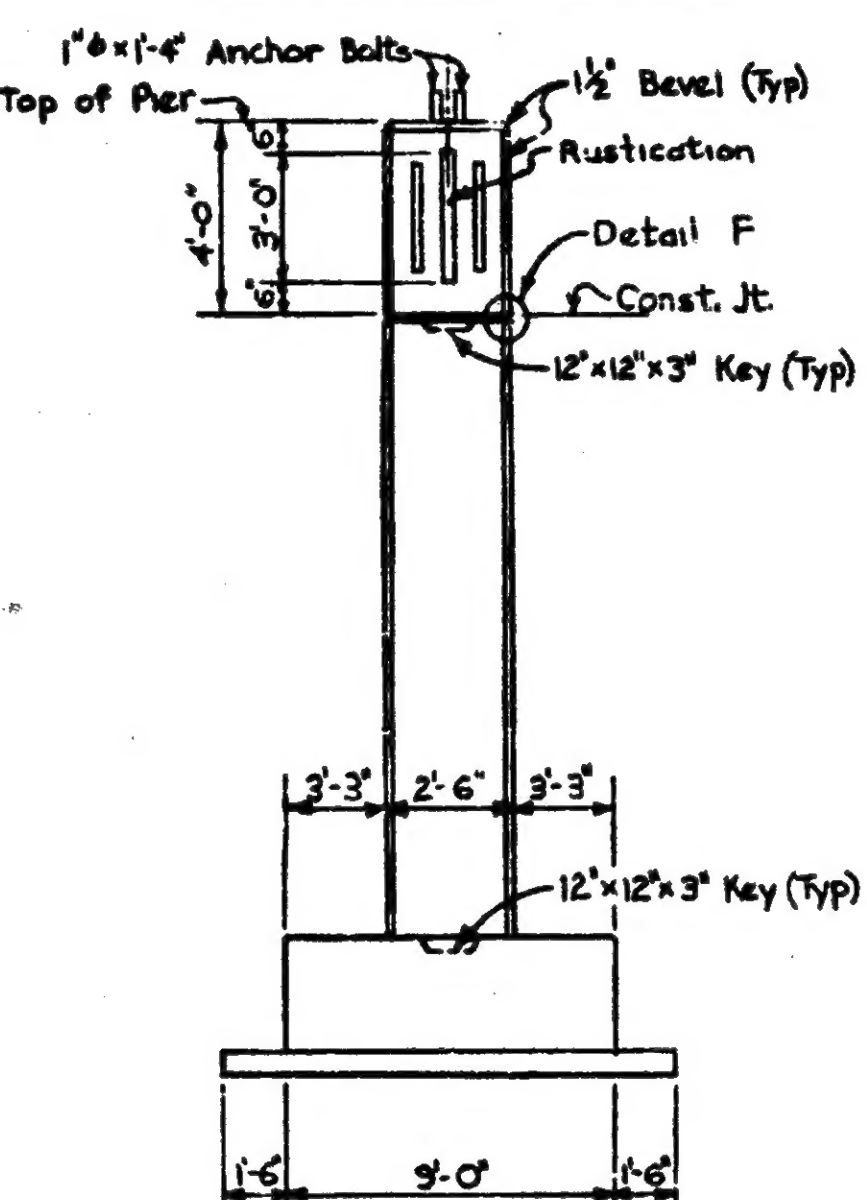
PLAN OF FOOTING



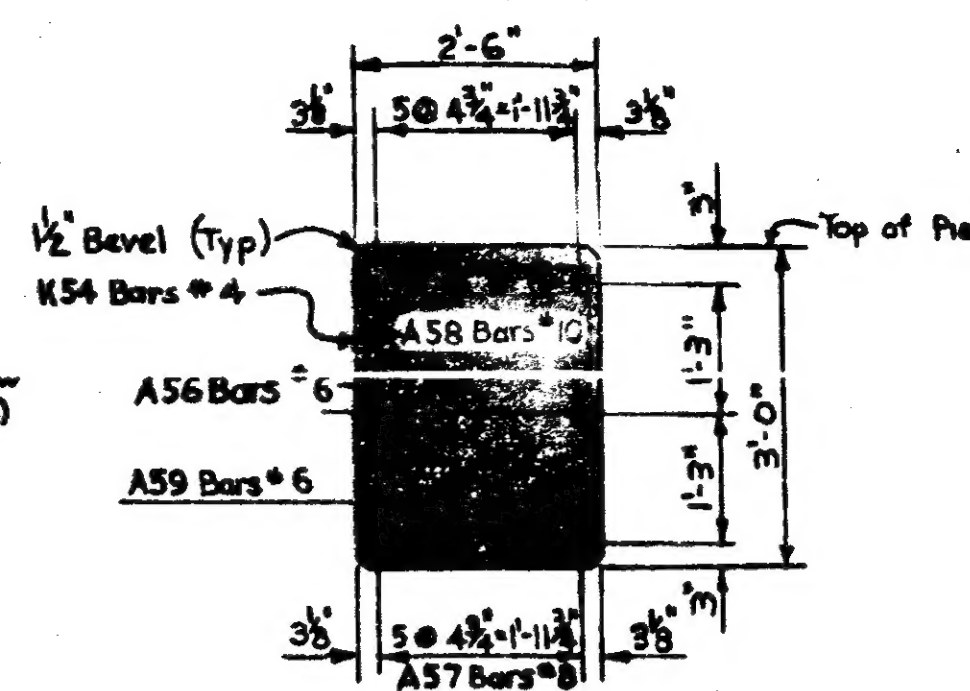
ANCHOR BOLT DETAILS



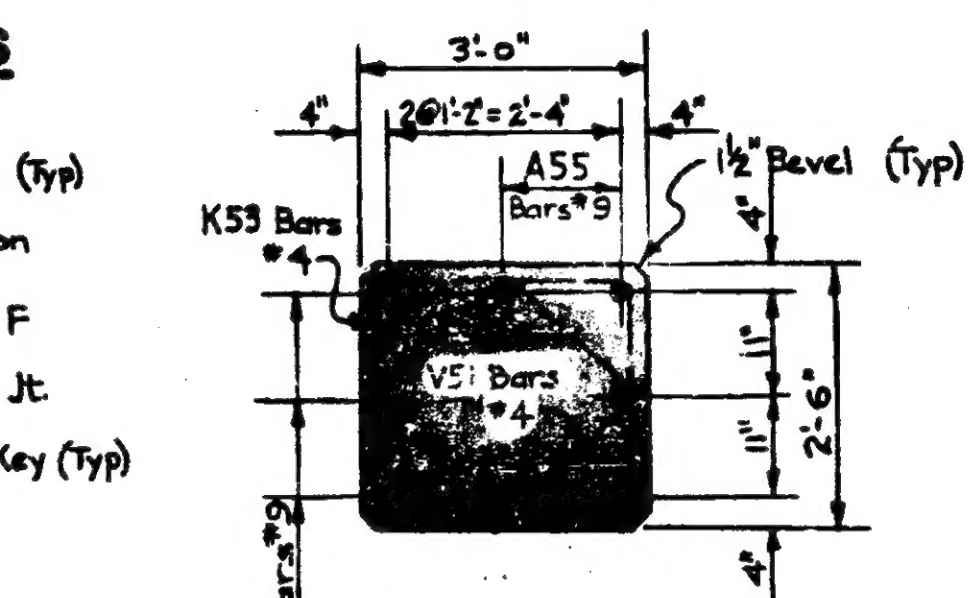
RUSTICATION DETAILS



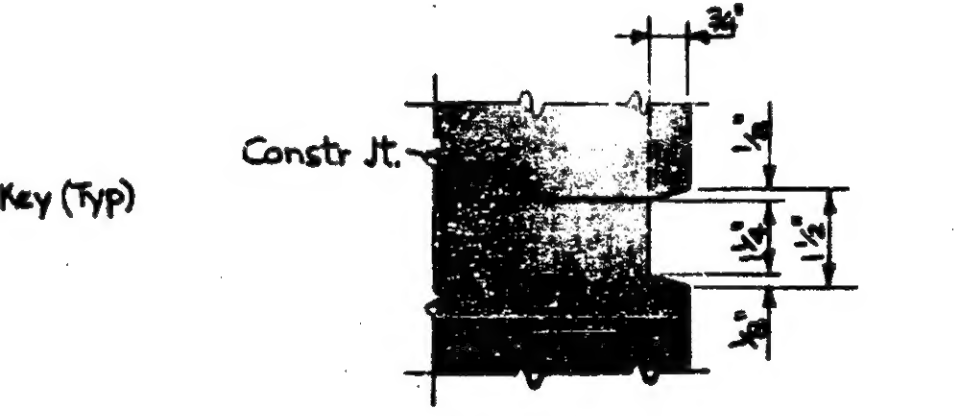
END VIEW



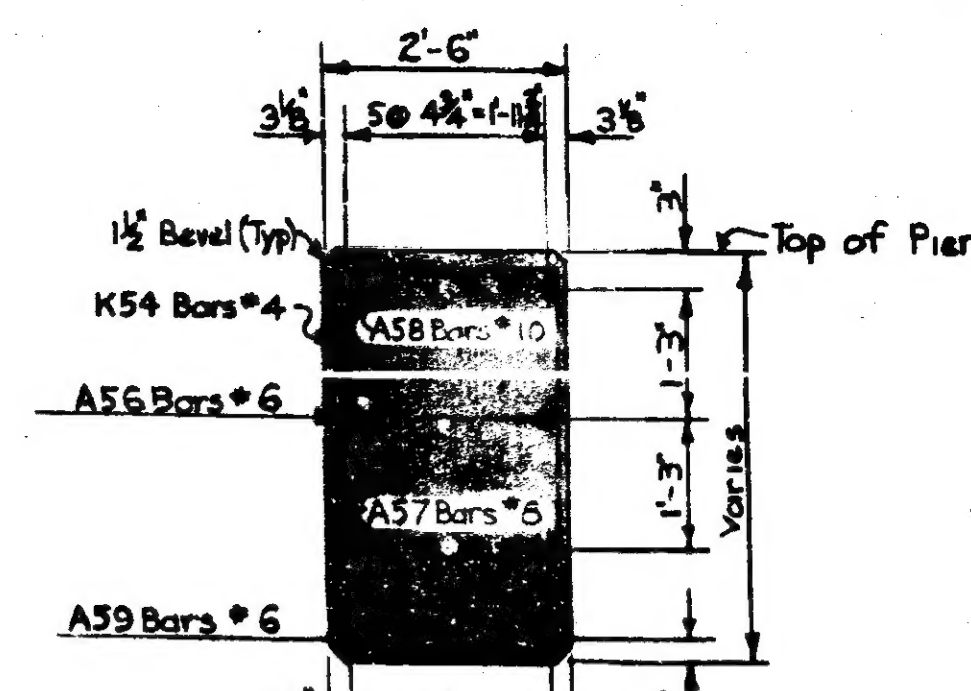
SECTION A-A



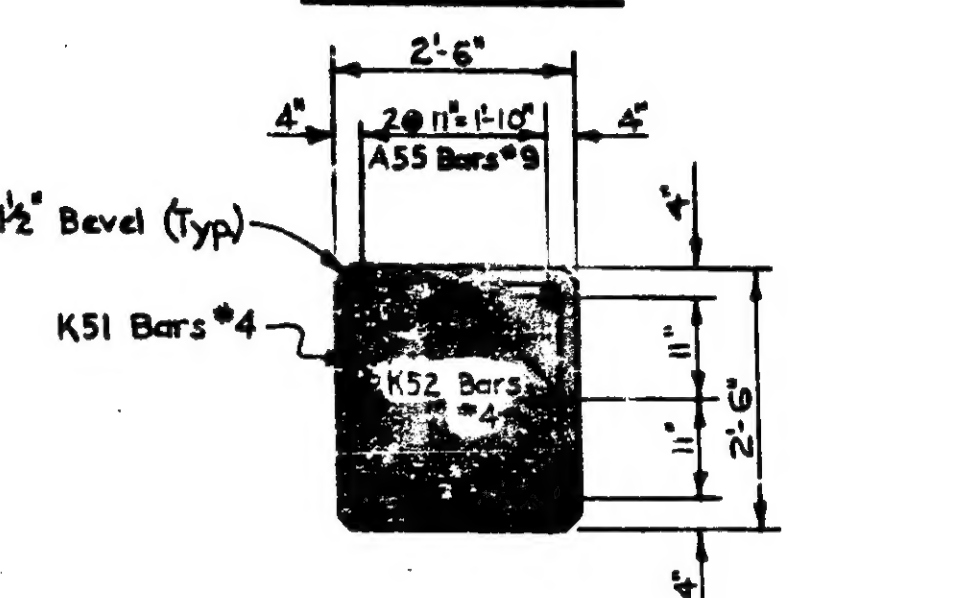
SECTION C-C



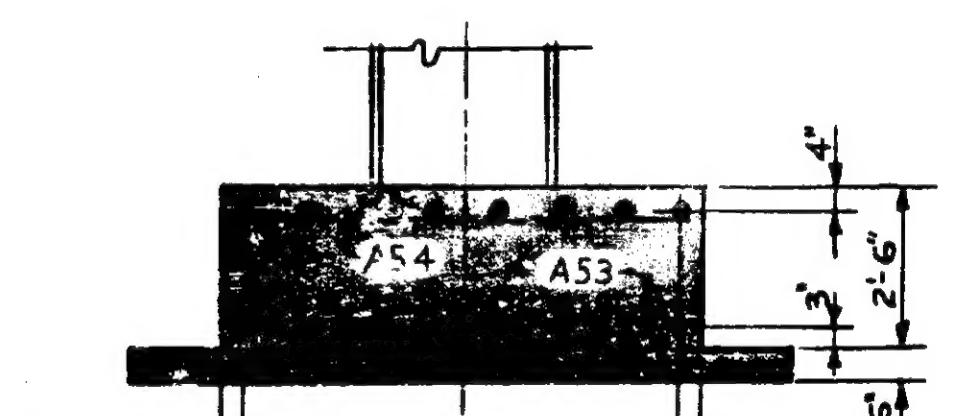
DETAIL F



SECTION B-B



SECTION D-D



SECTION E-E

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	PIER 1	PIER 2	TOTAL
Foundation Excavation	Cu. Yds.	110	110	220

GRADE A CONCRETE QUANTITIES - CUBIC YARDS				
POUR	LOCATION	PIER #1	PIER #2	
		(6A)	(6B)	(6A) (6B)
A	Subfooting	9.7	9.7	
B	Footing	33.8	33.8	
C	Columns	12.2	12.2	
D	Girders	7.6	7.6	
E	Girders	3.9	3.9	
Subtotal		43.5	43.5	87.0
Total - (6A)		87.0		
Total - (6B)			47.4	

Notes:

Anchor bolts shall be set accurately to a template.

Piers are similar except as noted.

For Bevel & Molding details, see Std. Sh. R10.

Anchor bolts are to be set accurately to a template.

The tops of piers shall be finished to a true plane at the elevation shown and shall not vary more than 1/8" under a ten foot straight edge and not more than 1/8" under any bearing.

Reinforcing steel spacing in girders is to be adjusted as required to facilitate setting of anchor bolts.

The design is based on a maximum foundation pressure of 2400 pounds per square foot and a maximum average foundation pressure of 1800 pounds per square foot.

The Project Engineer shall adjust the spacing of the reinforcing steel as required to permit placing of anchor bolts.

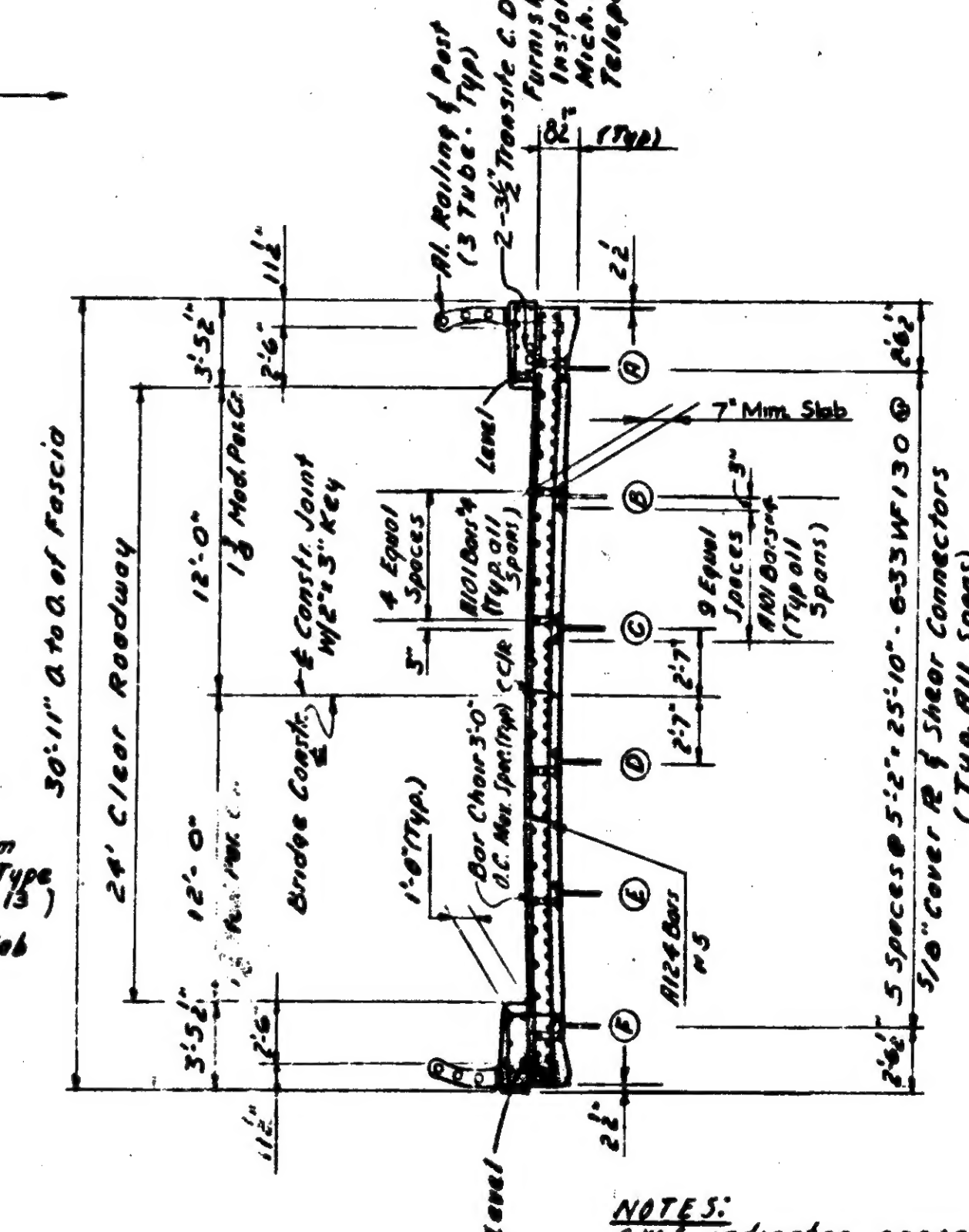
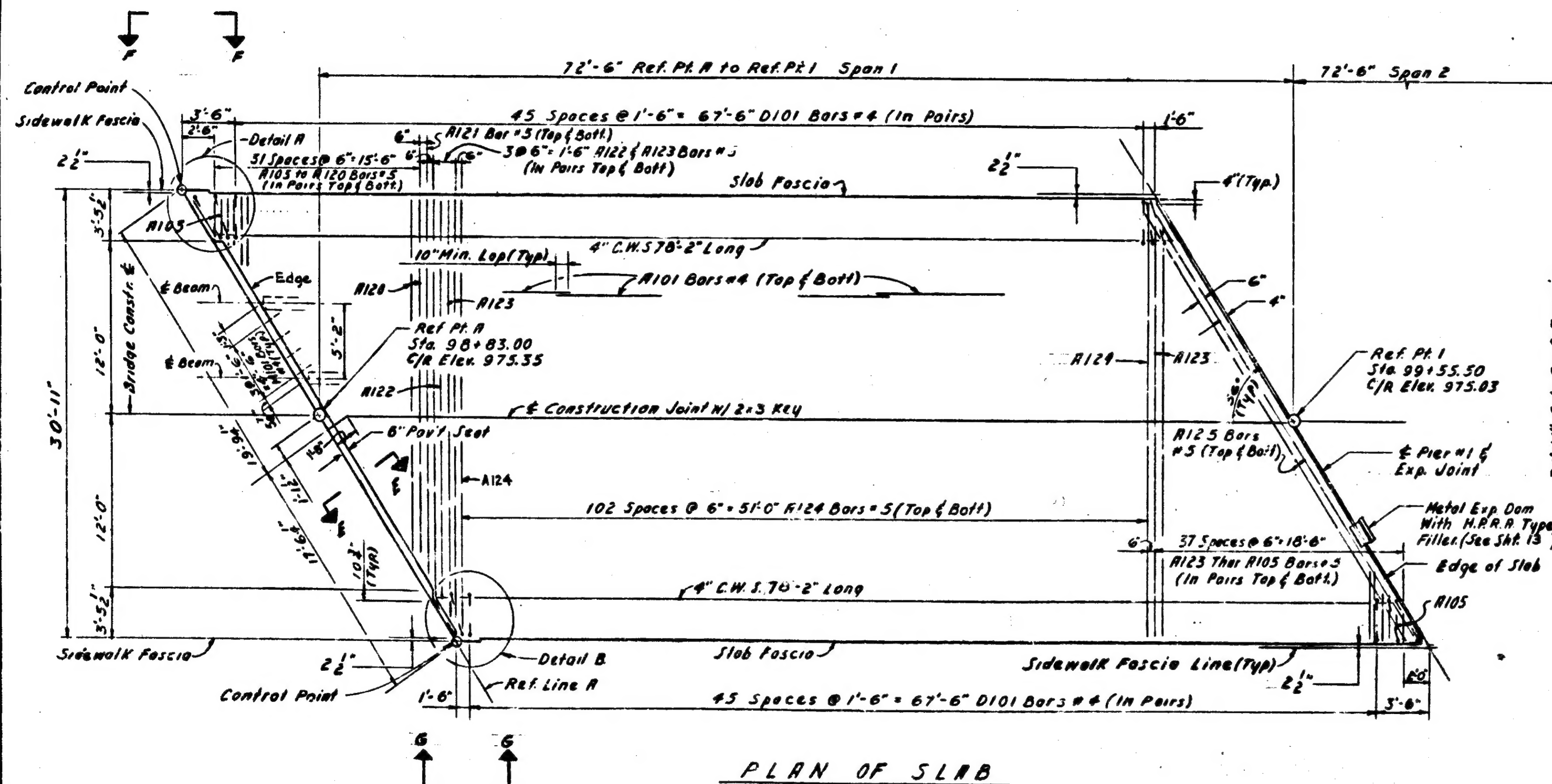
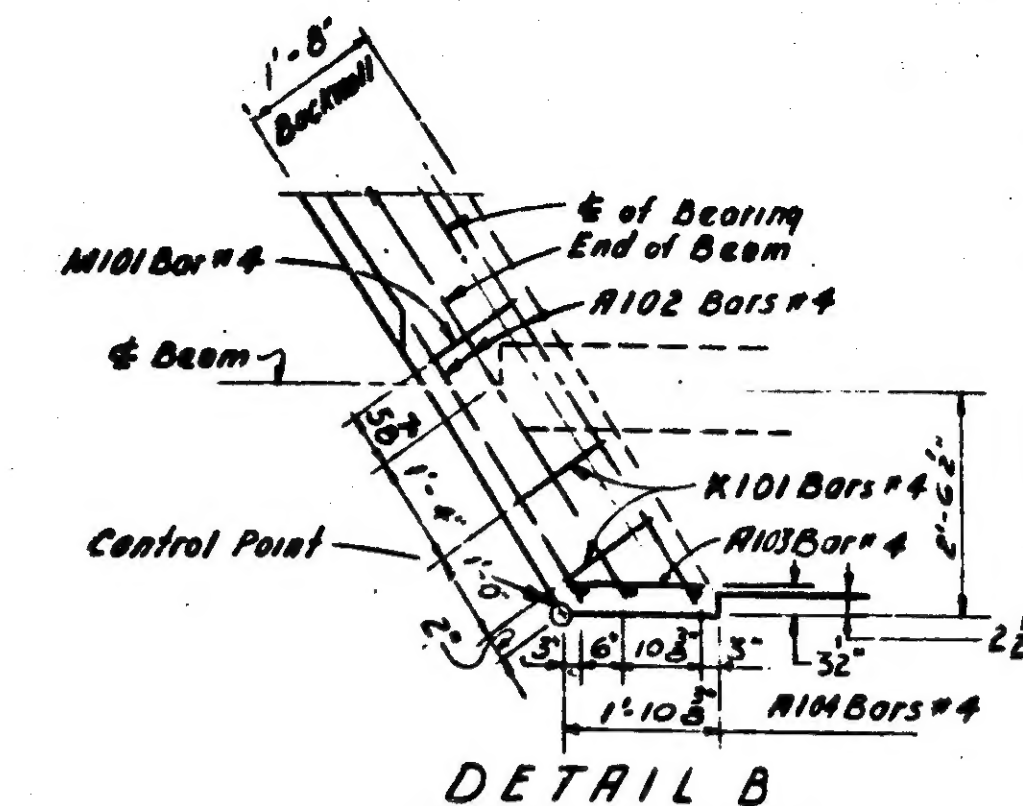
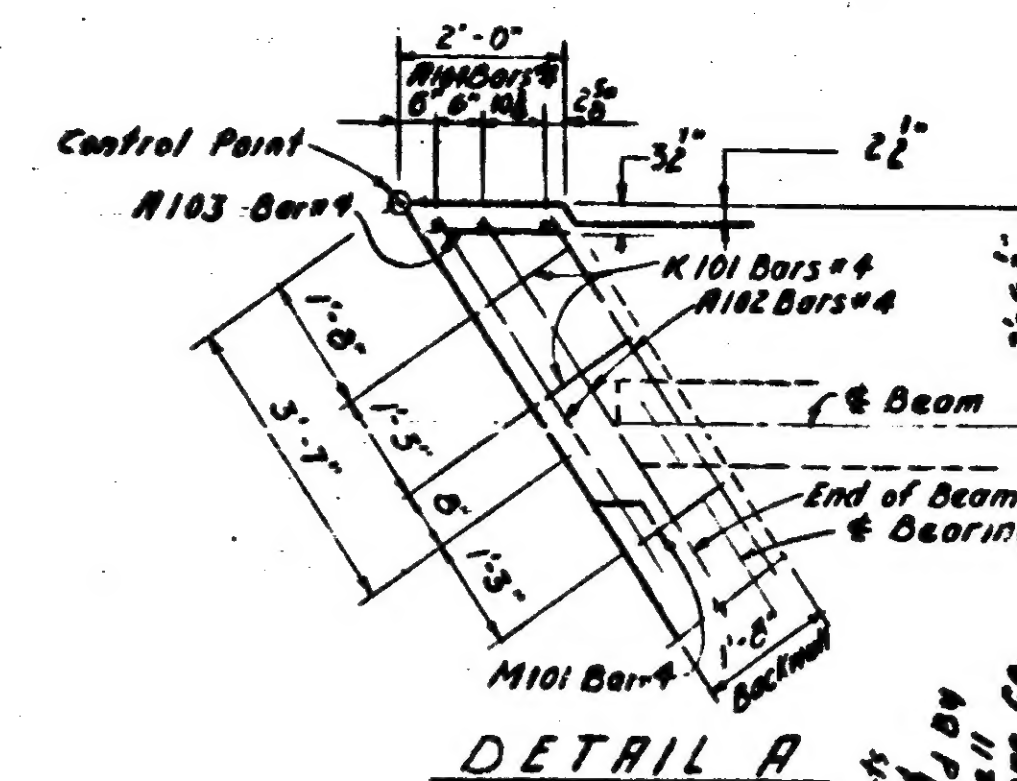
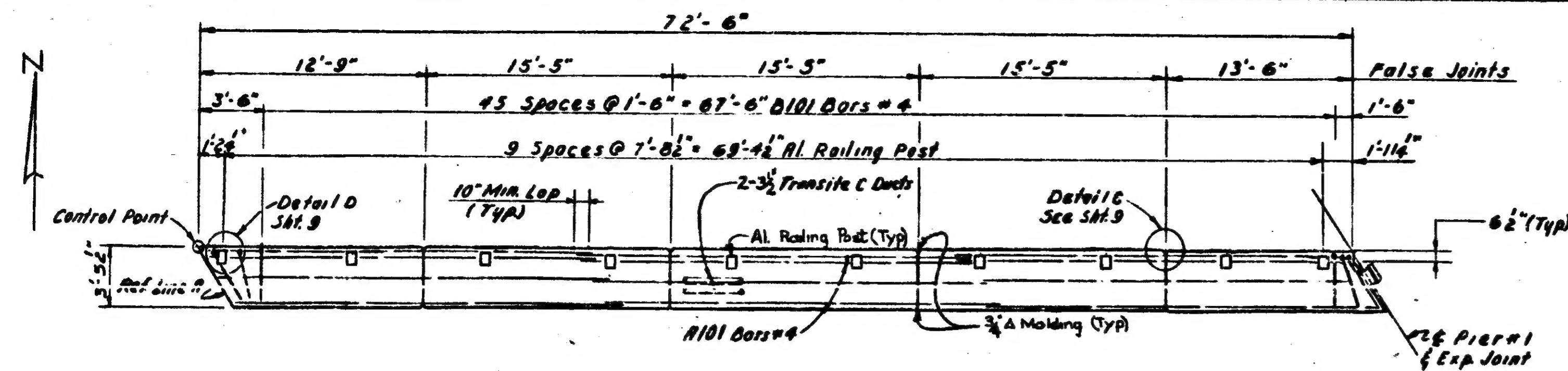
MICHIGAN STATE HIGHWAY DEPARTMENT

PIER DETAILS

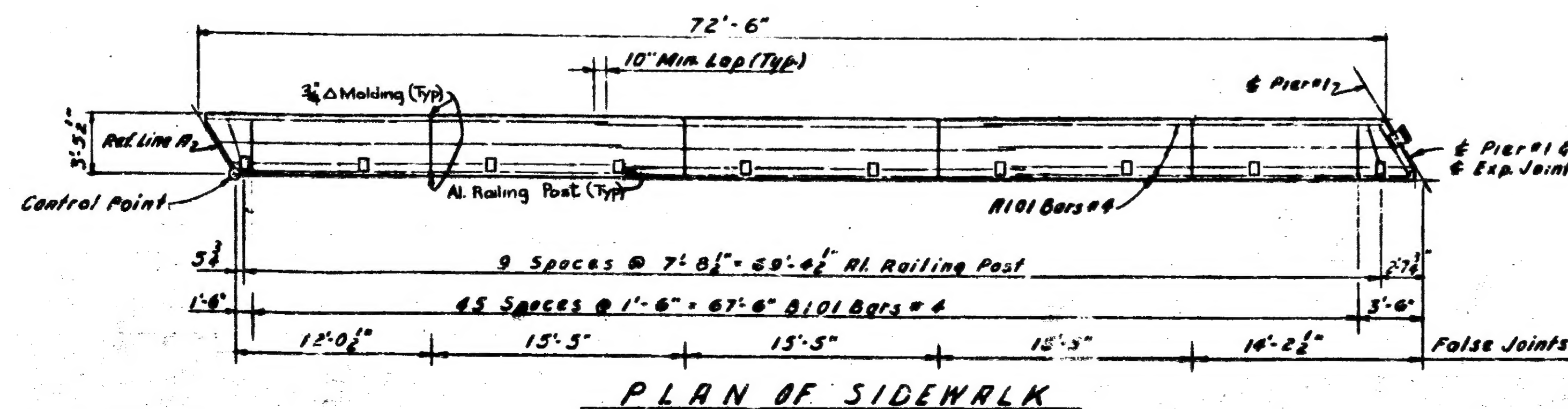
REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

DATE: 11-19-60
DRAWN BY: F.O.C.
CHECKED BY: 11-17-60
SHEET: 6 OF 16
B1 OF 16-5-6



NOTES:
C.W.S. indicates copper waterstop
J.W.S. indicates joint waterstop
For Bevel & Molding Detail See Sheet No. R10
Edge and Groove denote Edging or Grooving with an
approved tool.
Sidewalk pavers shall not be cast until slab concrete
has attained at least 50% of its design strength
or determined by table in Section 5.01.03 of the
Standard Specifications.

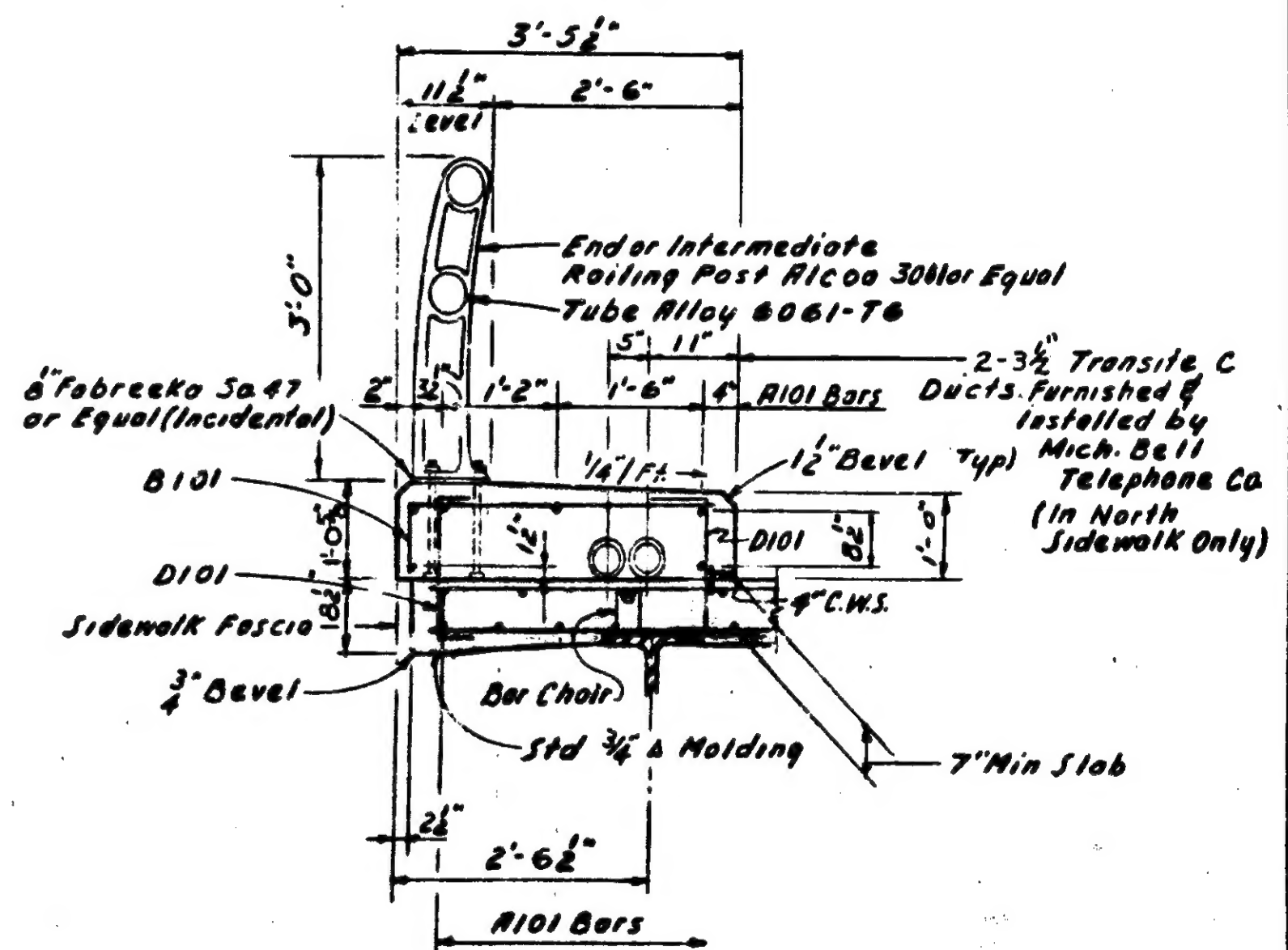
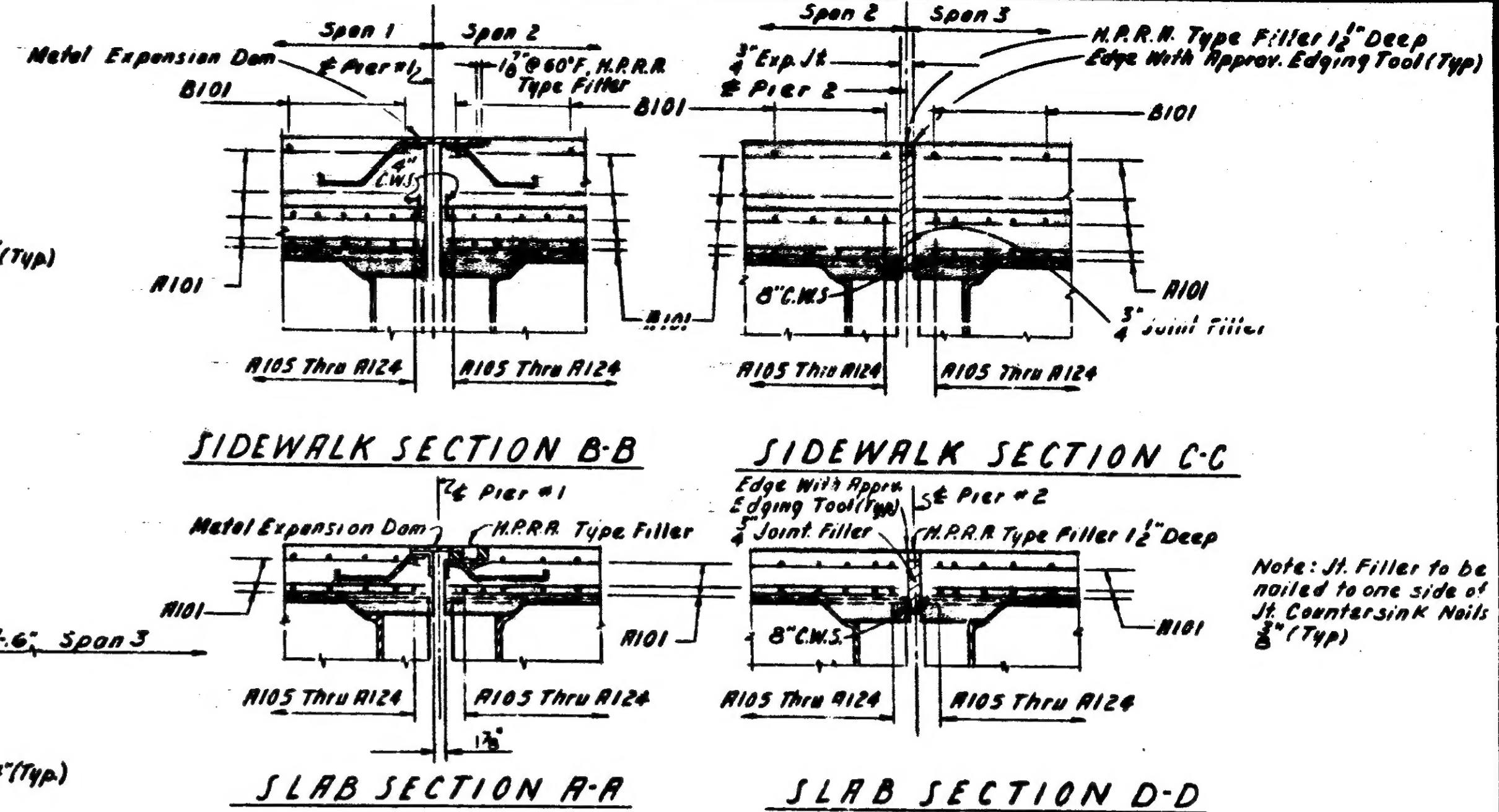
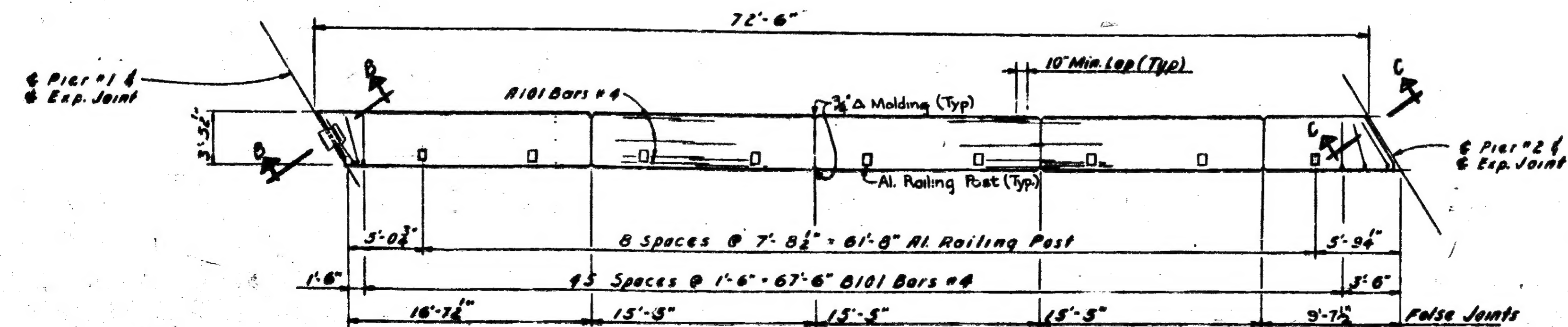
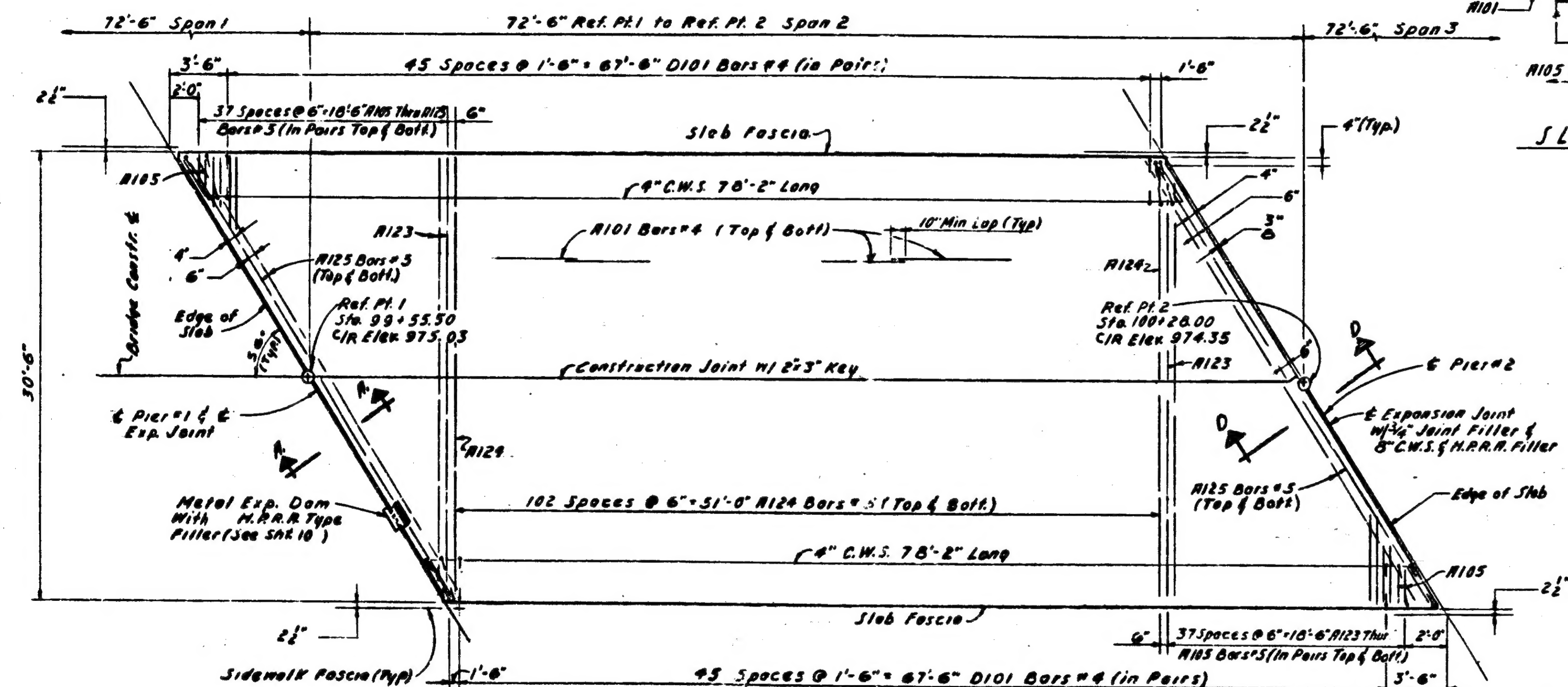
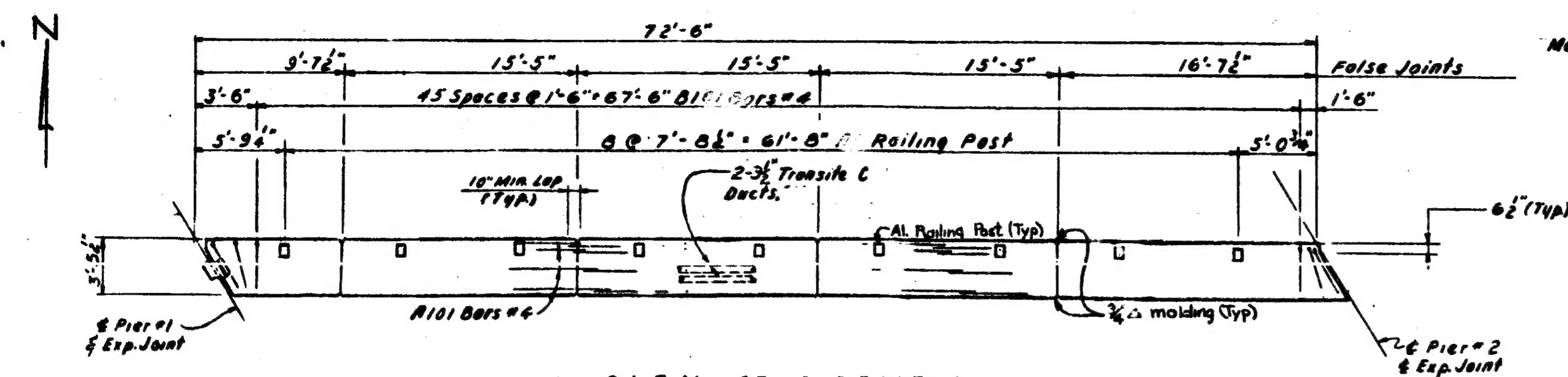


WORK THIS SHEET WITH SHEETS 8, 9 & 10

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS
SPAN 1

REVISIONS			
NO.	DESCRIPTION	DATE	BY

INQUIRY MADE	RUSSELL	11-19-60
MADE BY	ALFRED	10-60
TRACED BY		
CHECKED BY	F.O.C.	11-17-60
SHEET 7 of 14		
B1 of 16-5-6		



WORK THIS SHEET WITH SHEETS 7.9 & 10

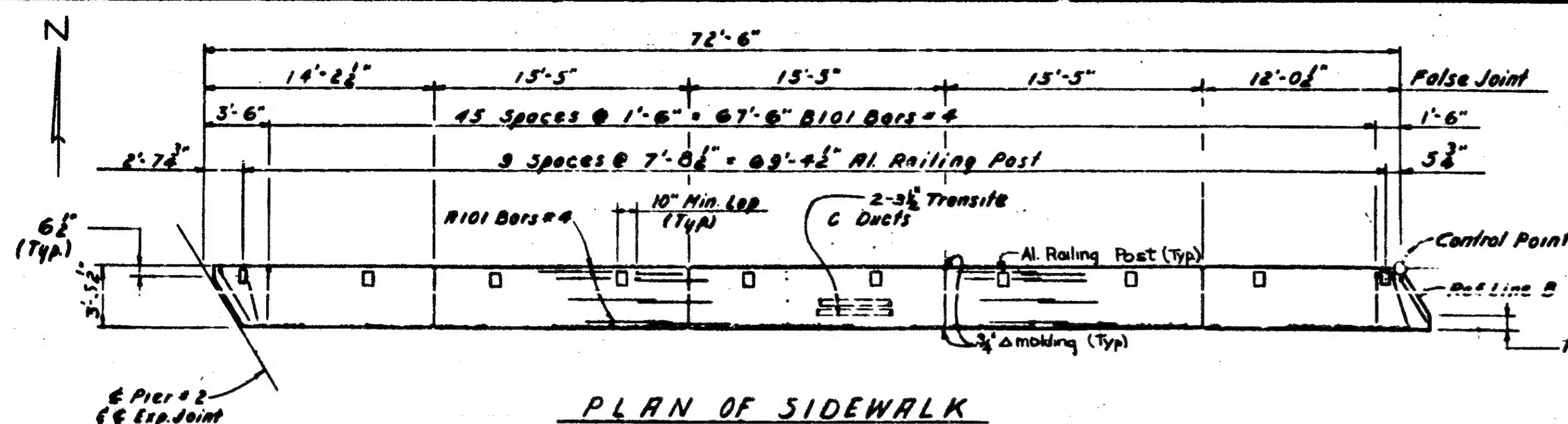
MICHIGAN STATE HIGHWAY DEPARTMENT

SUPERSTRUCTURE DETAILS

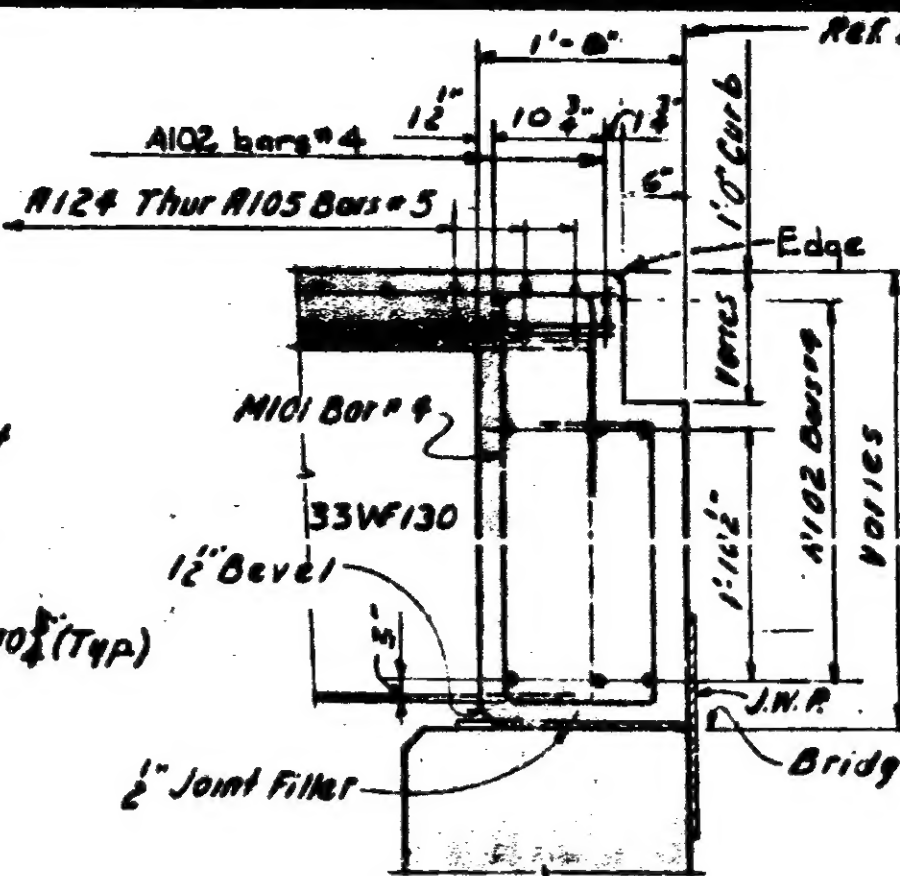
SPAN 2

NO.	REVISIONS	DATE	BY
1	DESIGN	11-17-60	FOC
2	CONSTRUCTION	11-17-60	FOC

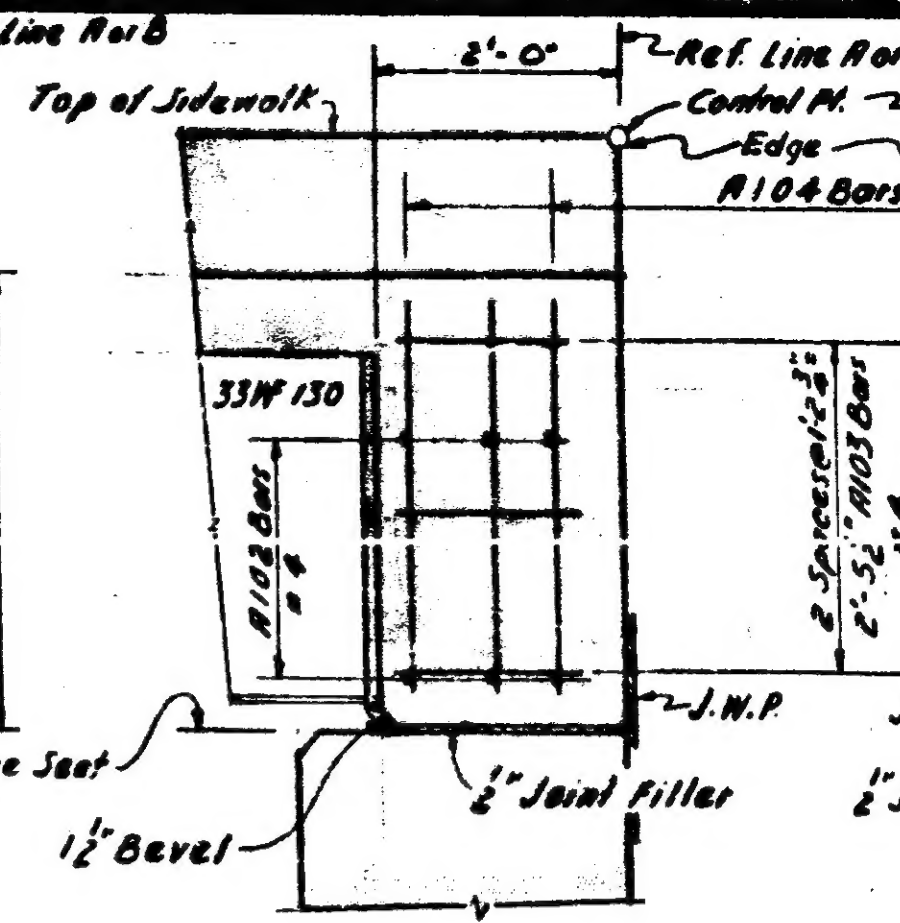
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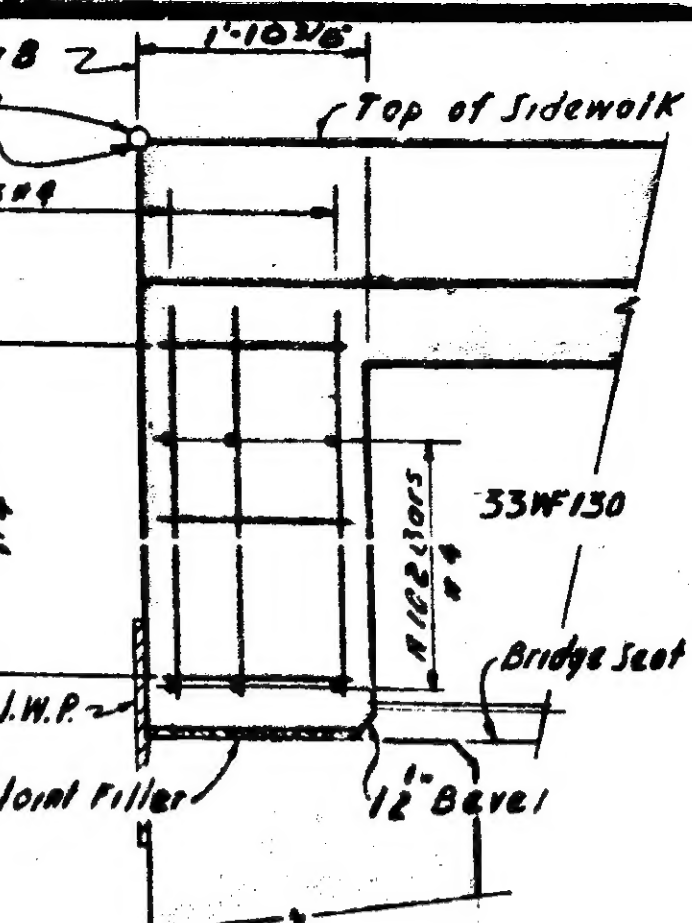
PLAN OF SIDEWALK



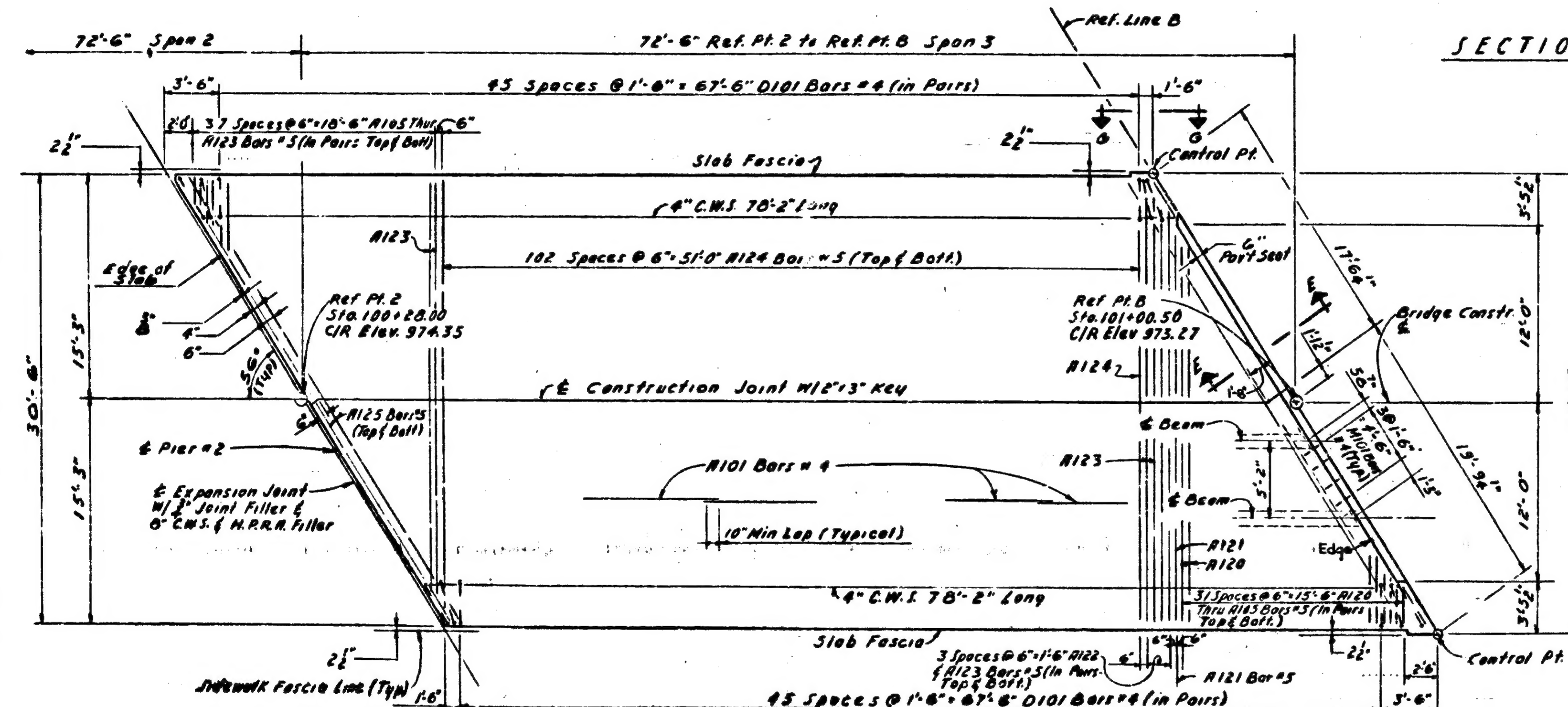
SECTION E-E



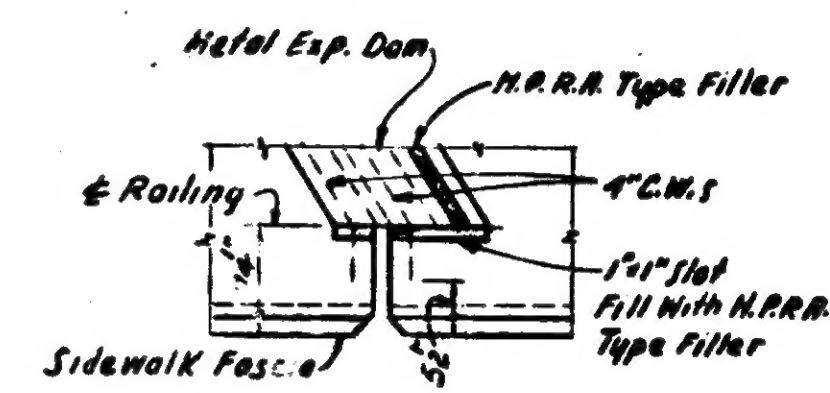
VIEW F-F



VIEW G-G



PLAN OF SLAB



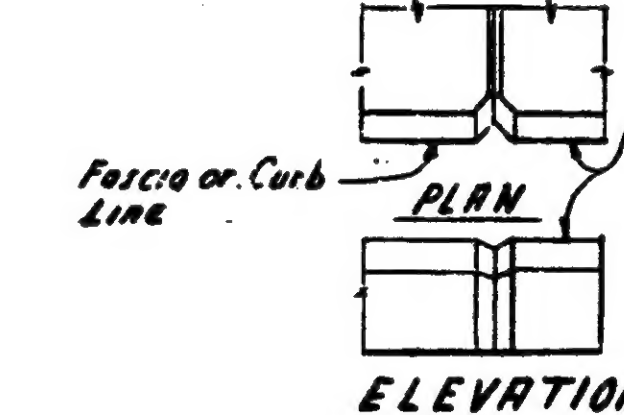
DETAIL AT END OF EXP. JOINT IN TOP OF WALK



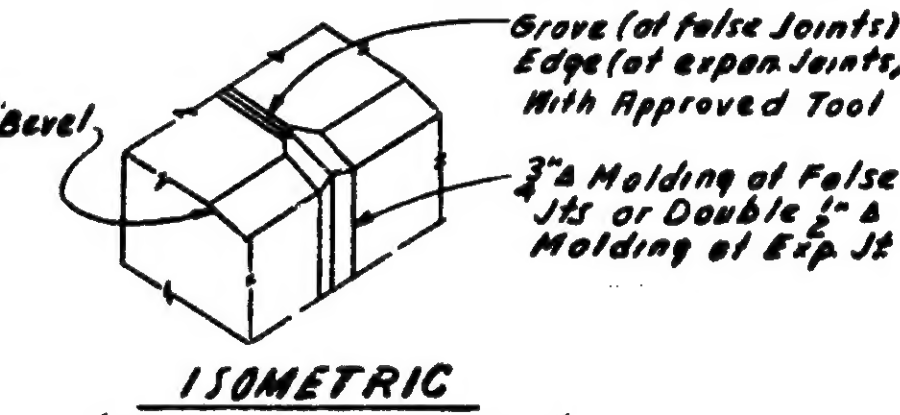
8\"/>



4\"/>

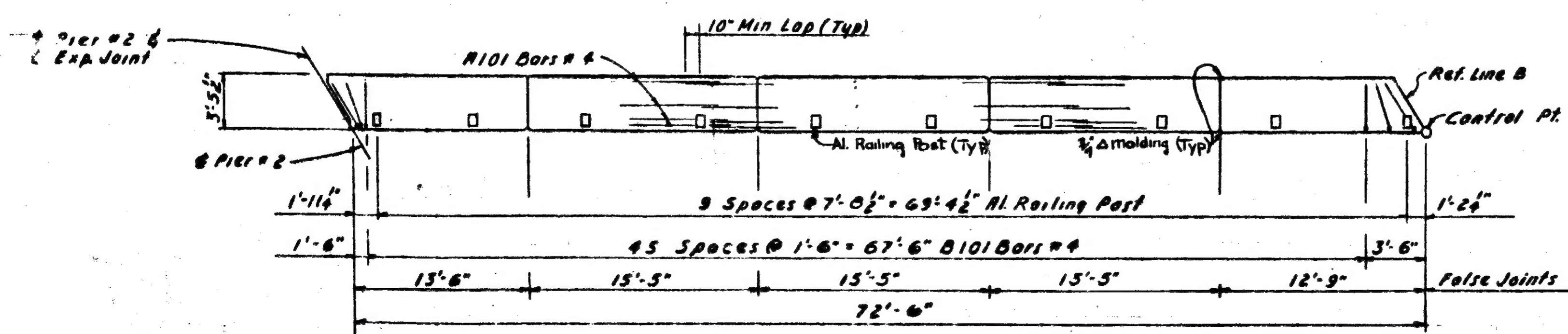


ELEVATION

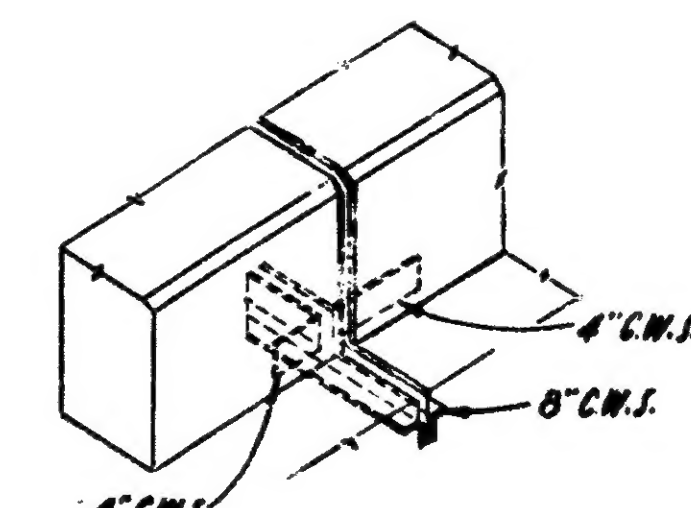


ISOMETRIC (At Fascia or Curb Line)

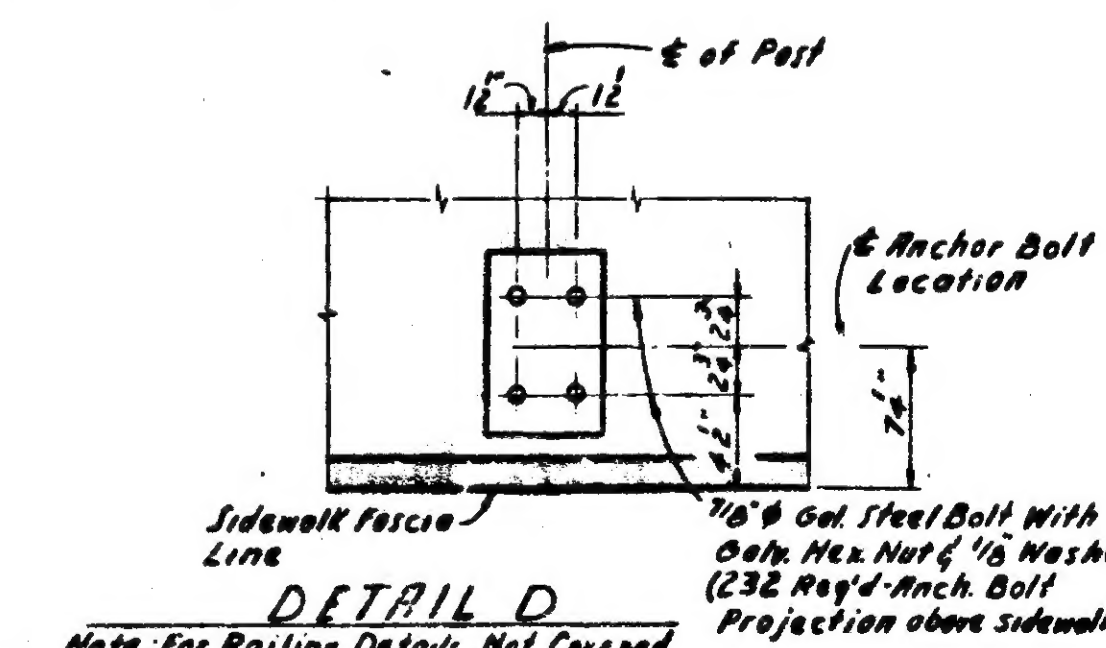
MOLDING DETAIL C



PLAN OF SIDEWALK



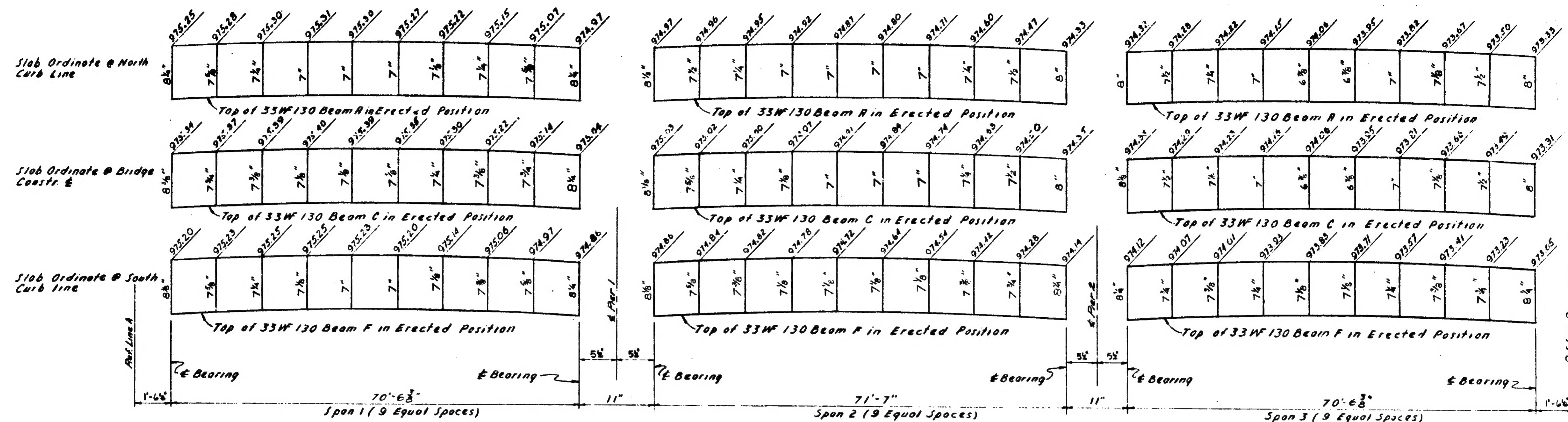
TYPICAL C.W.S. CONNECTION AT CURB LINE



DETAIL D

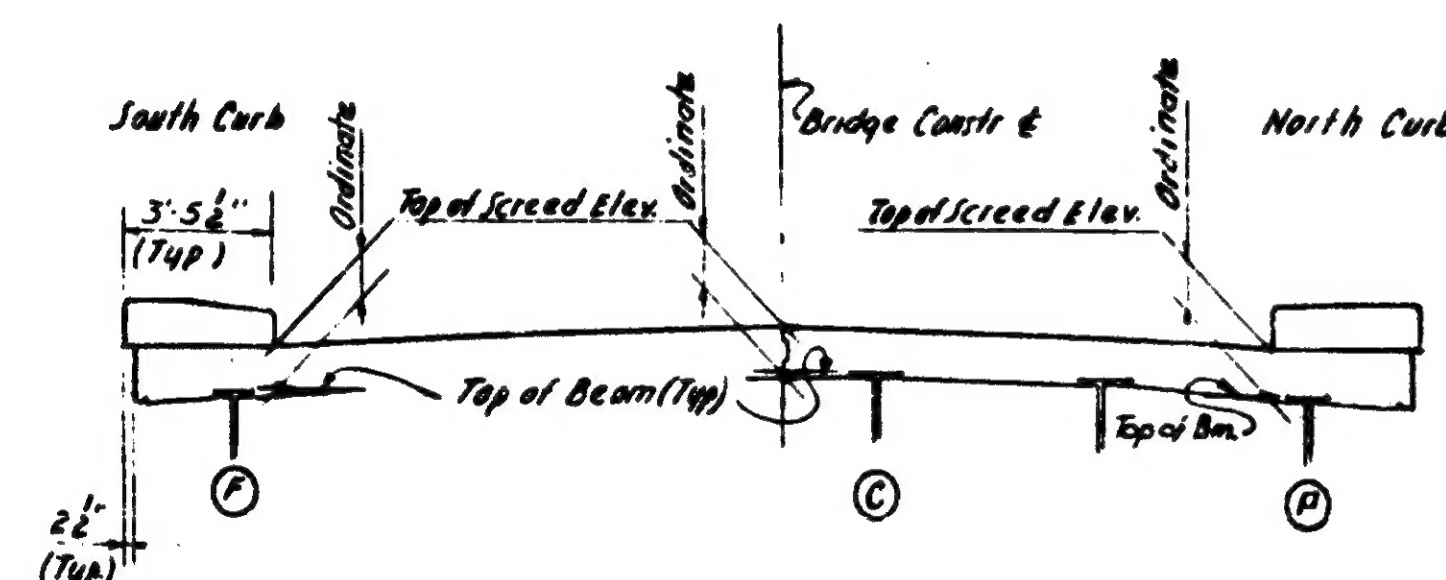
MICHIGAN STATE HIGHWAY DEPARTMENT SUPERSTRUCTURE DETAILS SPAN 3																			
<div> <div> REVISIONS </div> <div> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> </div> <div> <div> DRAWN BY: <i>Russman</i> 11-12-60 CHECKED BY: <i>Mitchell</i> 10-60 DATE: 11-17-60 SHEET: 9 OF 14 </div> <div> BI of 16-5-6 </div> </div> </div>				NO.	DESCRIPTION	DATE	BY												
NO.	DESCRIPTION	DATE	BY																

WORK THIS SHEET WITH SHEETS 7.0 & 10



J L A B ORDINATE DIAGRAM

NOTE: The slab ordinates shown provide for dead load deflection, crown and beam camber, and are to be measured from the top of the screed. Elevations shown are for top of screed before pouring any concrete and are based on a minimum slab thickness of 7" after screeds are set, if check indicates that less than the minimum thickness will be obtained, adjust screeds and expansion dams accordingly.



SECTION THROUGH DECK SHOWING LOCATION OF SCREED ELEVATIONS

MISCELLANEOUS QUANTITIES		
ITEM	UNIT	AMOUNT
Alum. Br. Rolling-Fab & Erect. (3 Tube)	Lin Ft.	435
Hot Poured Rubber Asphalt Type Filler	Lin Ft.	74
3/4" Joint Filler	Sq. Ft.	28
Copper Water Stop	Lbs	180

CONCRETE QUANTITIES - GRADE A (C.B.)				
LOCATION OF POUR	SPAN			TOTAL CU. YD.
	1	2	3	
North Sidewalk	90	90	90	270
North Rdwy Slab	300	248	29.5	567.5
South Rdwy Slab	29.5	248	30.0	507.5
South Sidewalk	95	95	95	285
GRAND TOTAL				2281

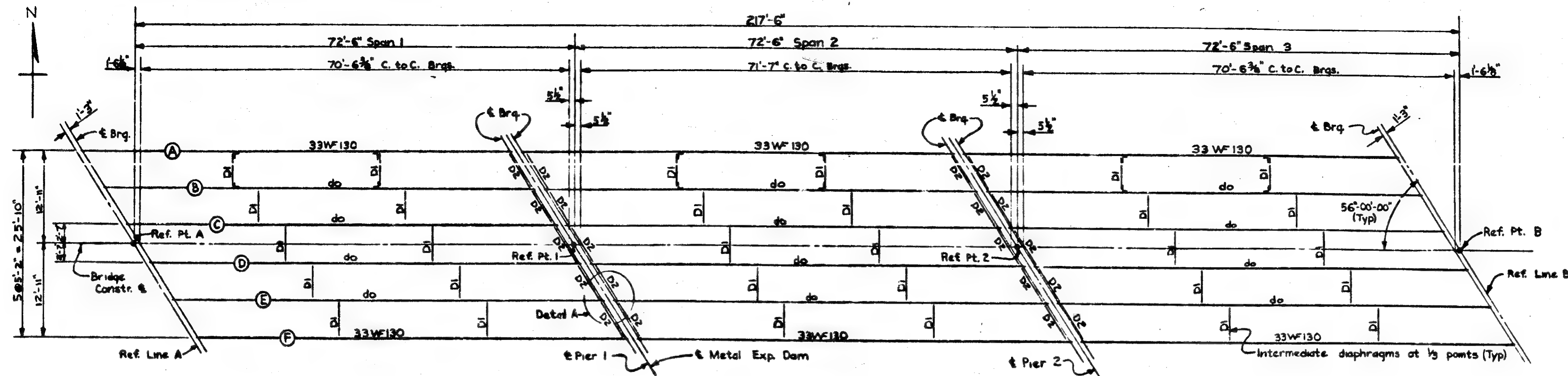
WORK THIS SHEET WITH SHEETS 7.0, 4.9

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS

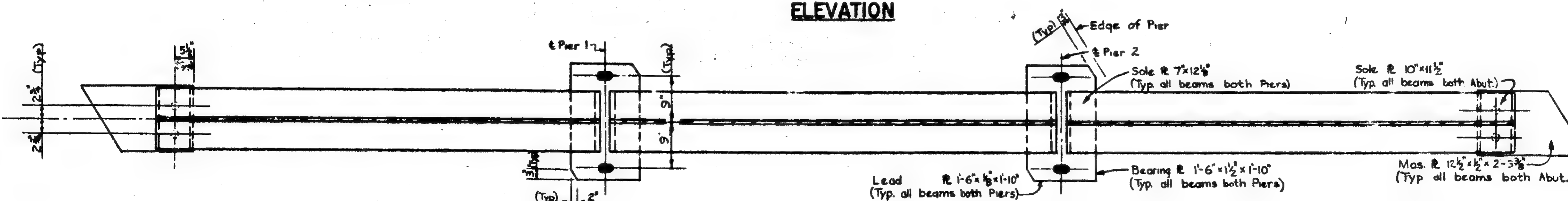
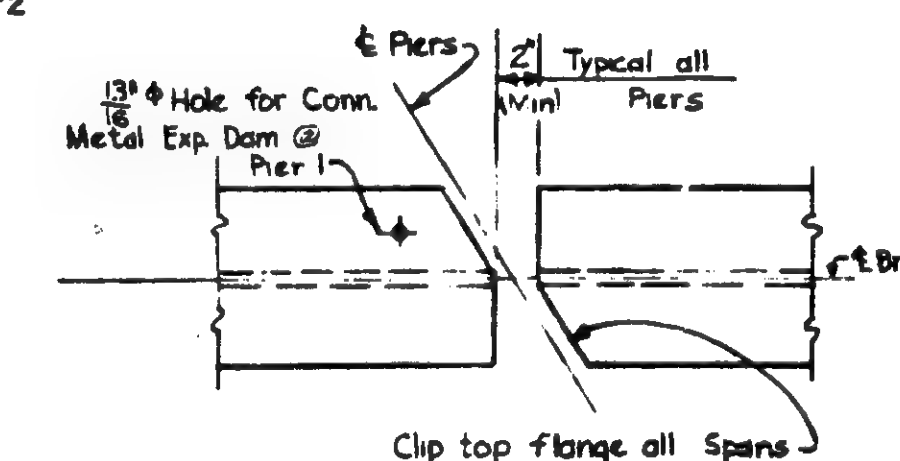
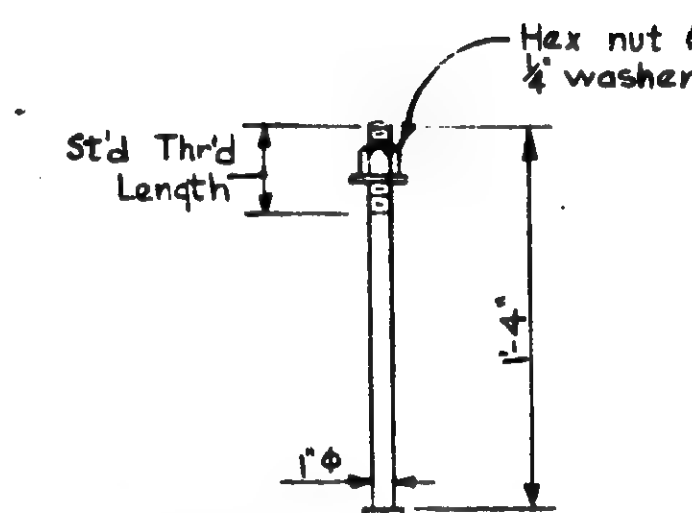
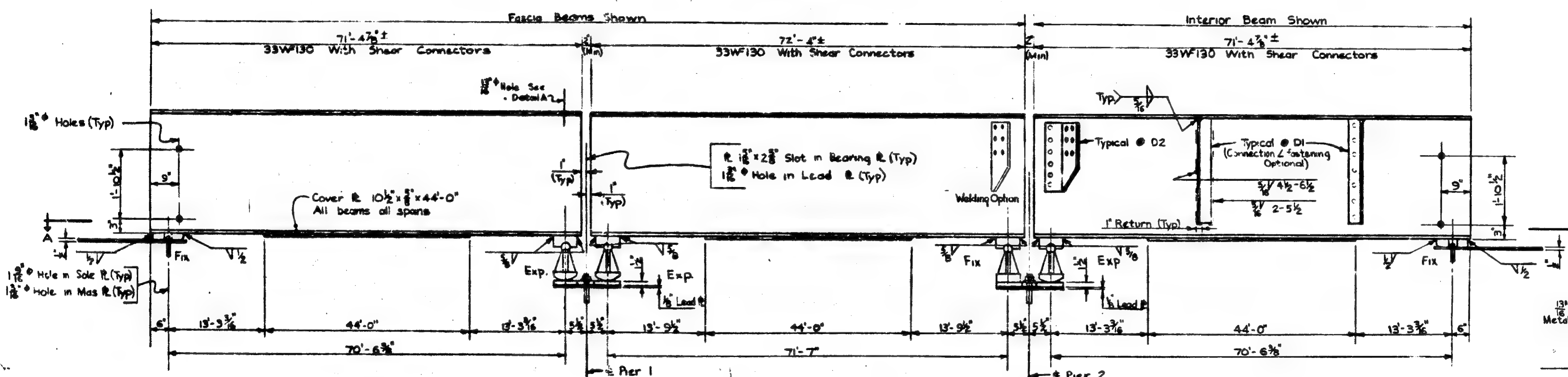
REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED BY	Russman 11-19-60
DRAWN BY	Mitchell 10-60
CHECKED BY	E.C.G. 11-17-60
SHEET	10 of 14

B1 of 16-5-6



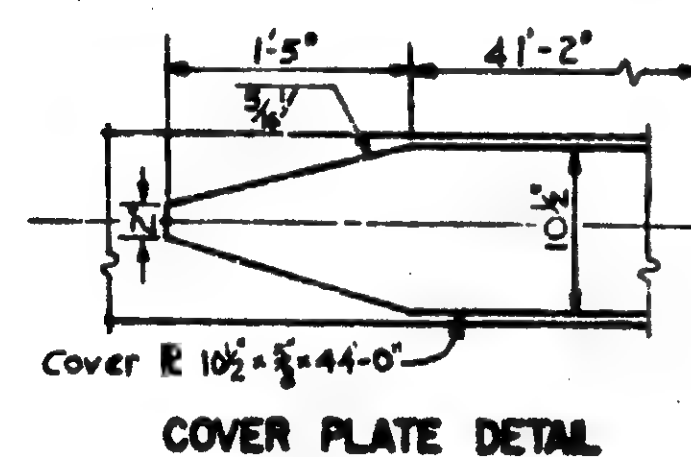
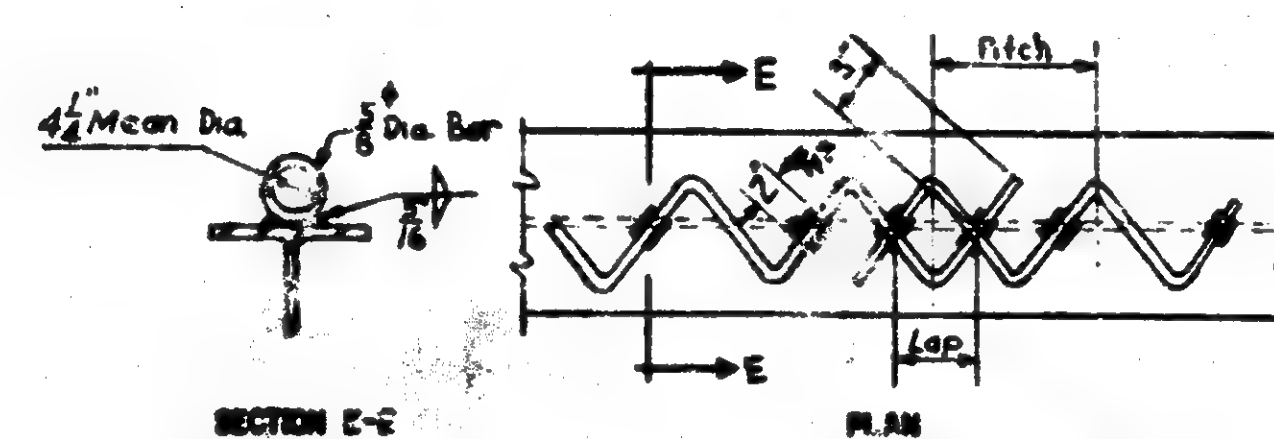
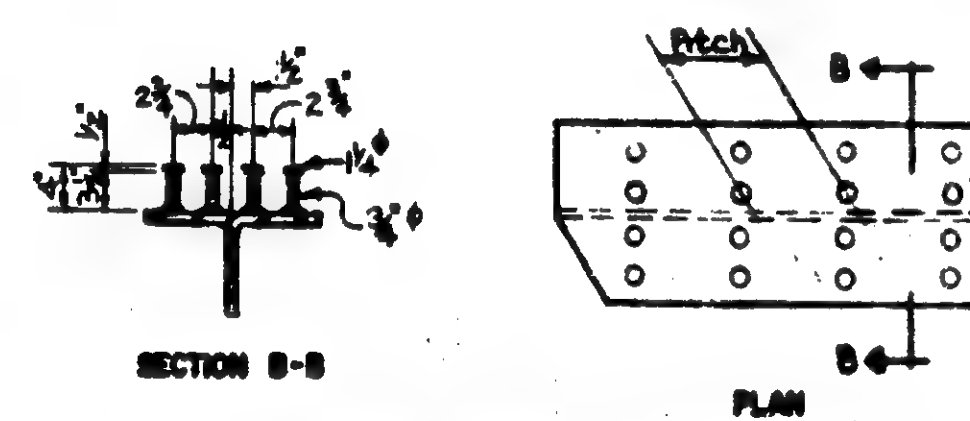
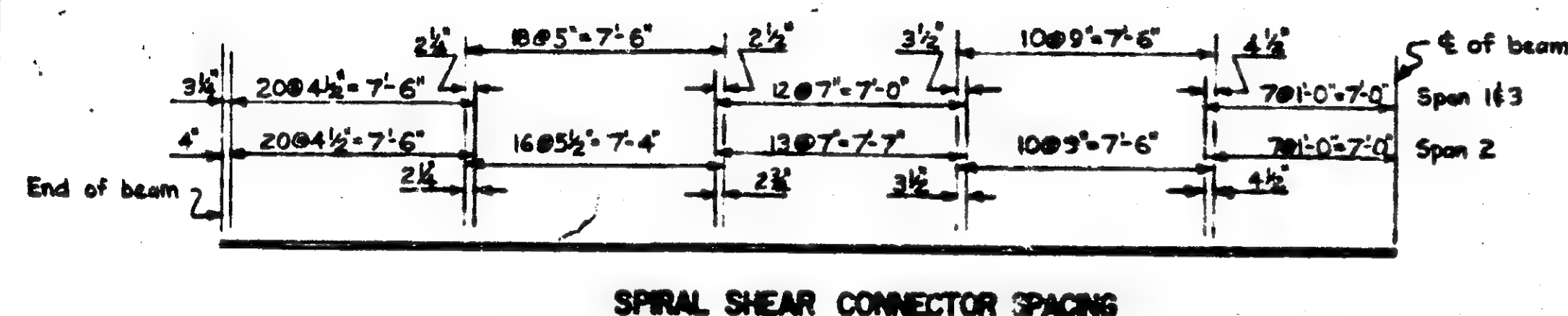
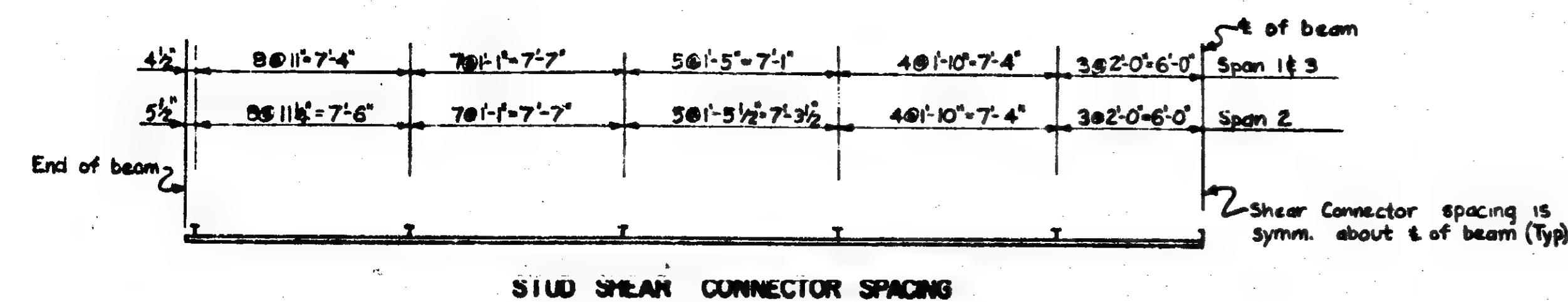
POSITION DOWEL
(24 Req'd for Abutments)



Work this sheet with sheets 12 & 13

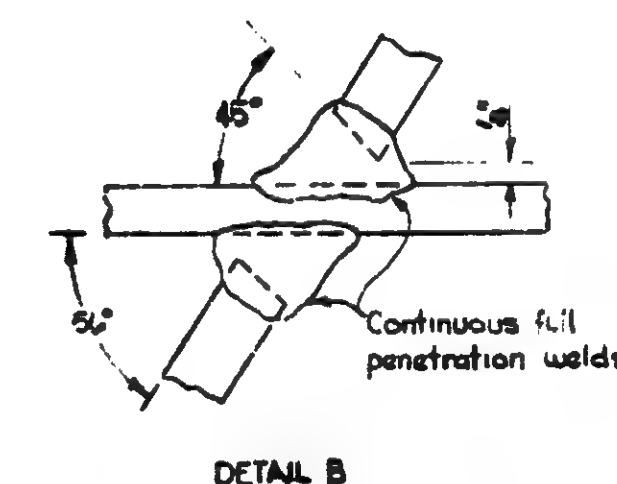
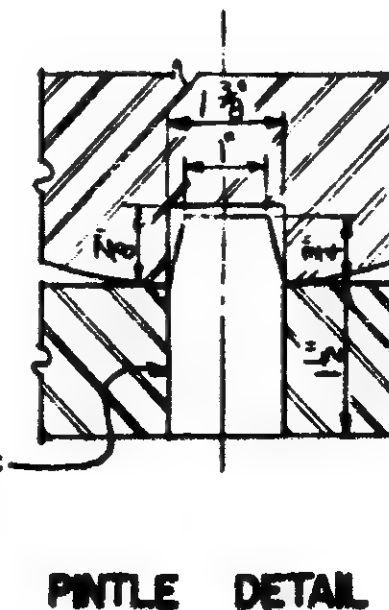
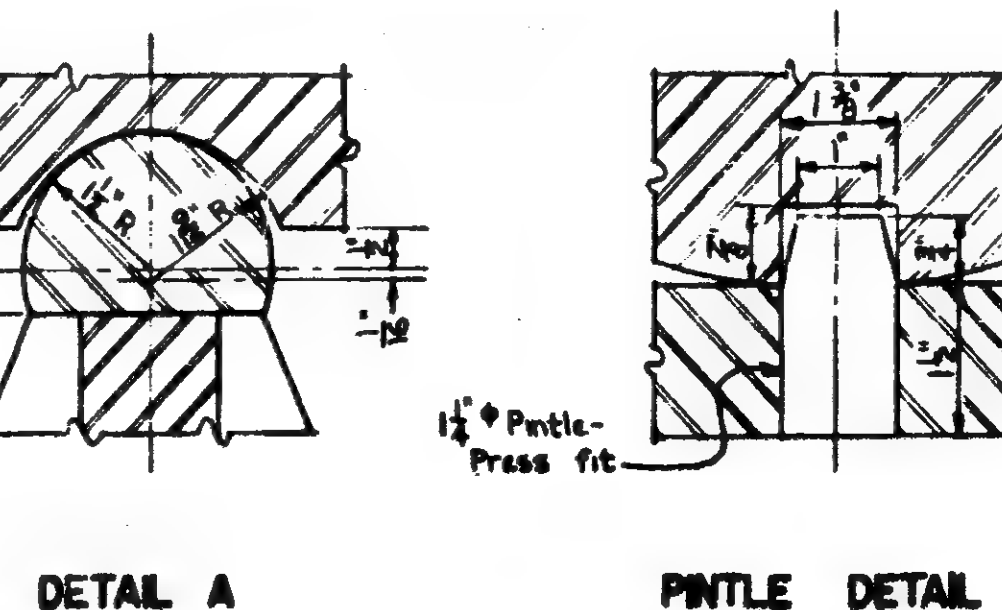
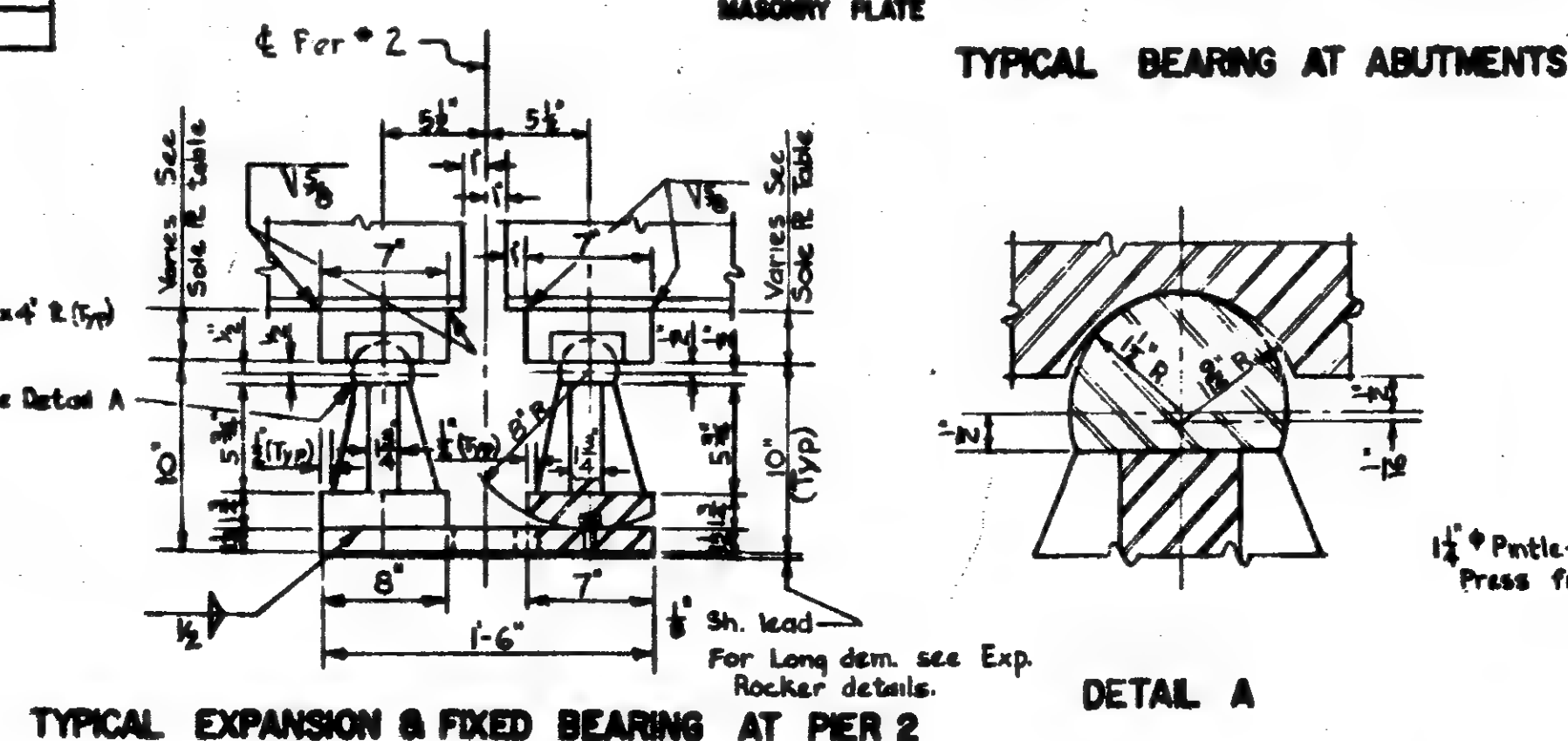
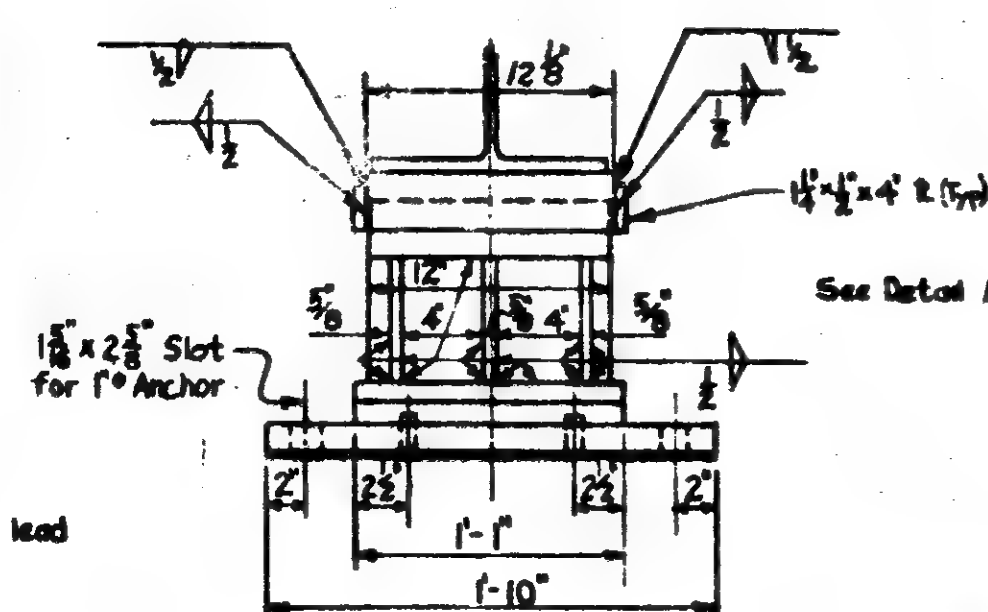
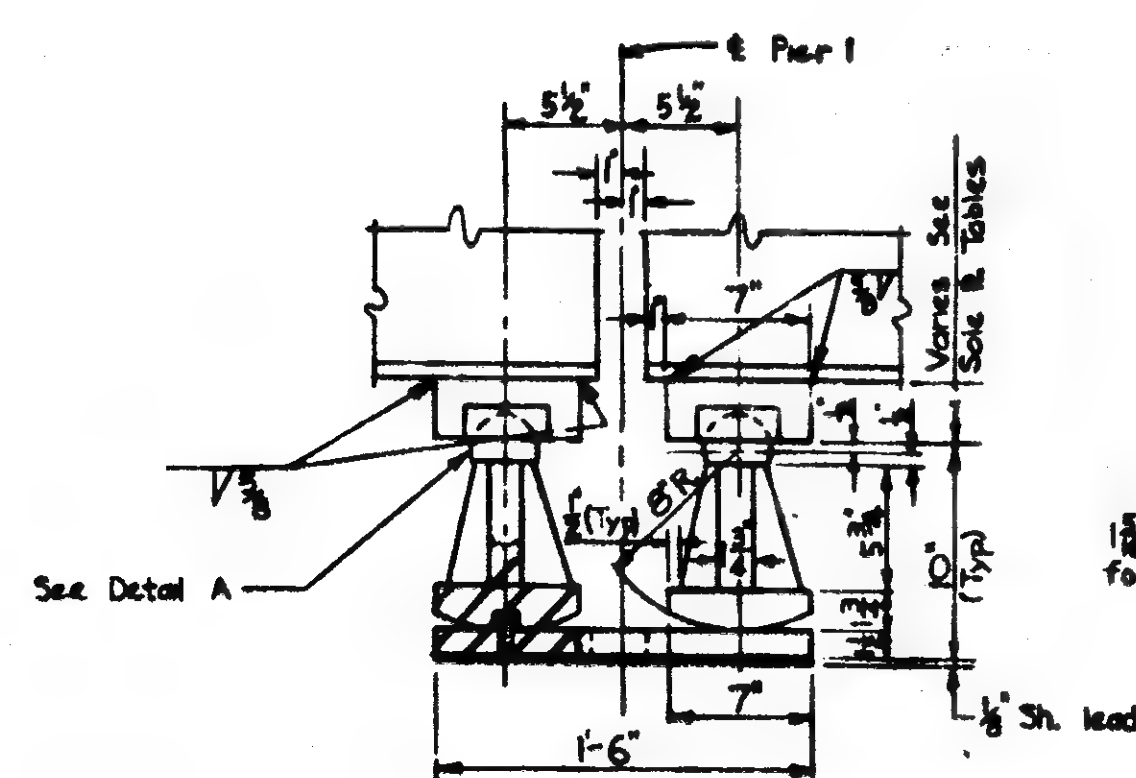
Note:
See Table on Sheet 12 for Sole Pl.
thickness.

MICHIGAN STATE HIGHWAY DEPARTMENT			
STRUCTURAL STEEL DETAILS			
REVISIONS NO. DESCRIPTION DATE BY			
DRAWN BY: <i>Russman</i> 11-19-60 CHECKED BY: <i>F.O.C.</i> 10-21-60 DATE: 11-14-60			
B1 OF 16-5-6			



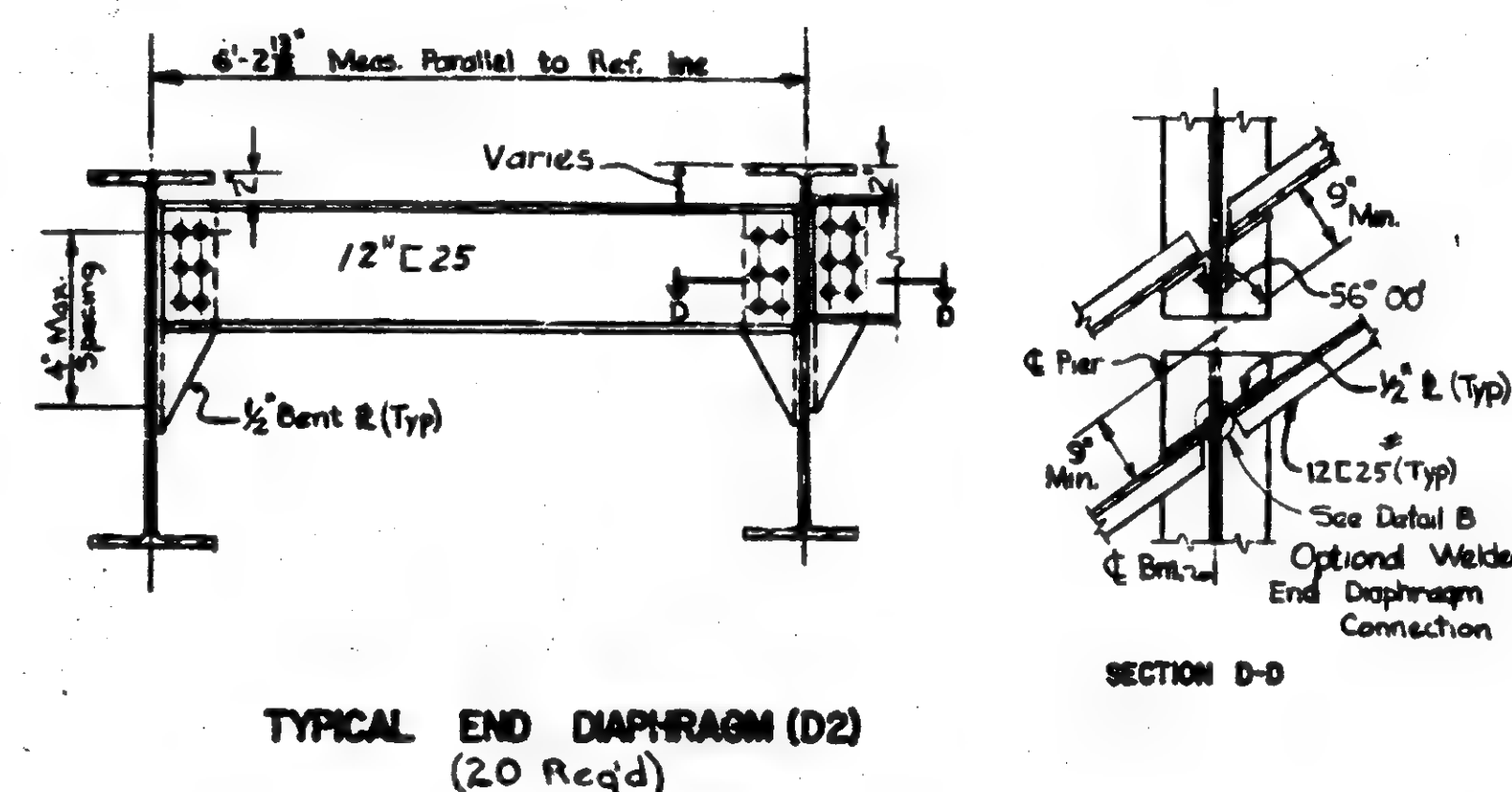
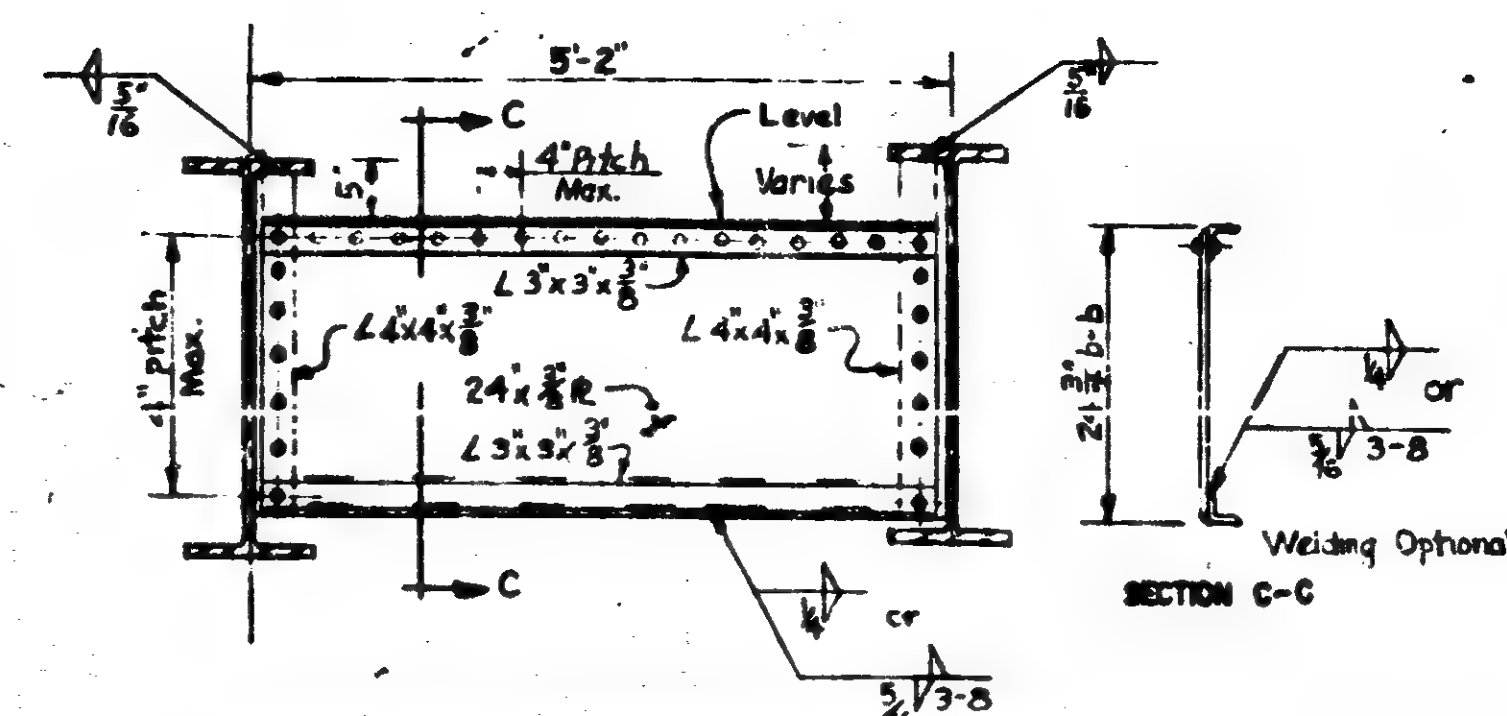
Stud Shear Conn.	
Span	N _B Req'd.
1	1320
2	1320
3	1320
Totals	3960

Span	Weight (lb)
1	1140.0
2	1132.0
3	1140.0
Total	3412.0



SOLE PLATE THICKNESS						
BEAM	Span #1 About A	Span #1 Per #1	Span #1 Per #1	Span #2 Per #2	Span #3 Per #2	Span About
A	2 1/2	3 3/8	3 1/2	4 1/2	4 5/8	5 1/8
B	2 3/4	3 1/2	3 1/2	4 1/2	4 1/2	5 1/2
C	3 1/2	4 1/8	4 1/8	5	4 1/2	5 1/2
D	3 3/4	3 3/4	3 3/4	4 1/2	4 1/2	4 5/8
E	2 1/2	2 1/2	2	3 1/4	2 1/4	2 1/2
F	2 1/8	2 1/8	2	2 1/4	2 1/4	2 1/2

¹ Bevel all sole plates of Abut. B $\frac{1}{4}$ " per foot.



Notes:
Field Connections: Field connections unless otherwise noted shall be bolted with high strength bolts.
Fabrication: Michigan State Highway Department's Standard Specifications for Road & Bridge Construction-1960 Edition.

Design: Michigan State Highway Department's Specifications
for the design of Highway Bridges 1958 Edition
(HIS-44 Loading).

Shop Connections: All shop connections shall be welded or riveted as shown on the plans.

Rivets or High-Strength Bolts: $\frac{3}{4}$ " Dia.
Open Holes: Open holes for rivets or high-strength bolts shall be $\frac{13}{16}$ " Dia. unless otherwise noted.

Shop Paint: In addition to the shop paint provisions of the Standard Specifications, the top surfaces of masonry plates shall be coated in accordance with requirements for machine finished surfaces.

Metal expansion dam shall not be painted in the shop except as noted on plans.

Camber: Beams in span 1, 2 & 3 shall be given a camber of $3\frac{3}{8}$ " (maximum ordinate) in the mill.

Sole plates: Sole plates 3" or more in thickness may be built up by welding together plates not less than 1½" in thickness. Edges must be beveled ¼" and welded, with a continuous weld, for the full perimeter. Welds shall be ground flush with faces of plate.

Field Paint: Field painting shall consist of one complete coat of painting Mixture 2A & one complete coat of painting Mixture 5B.

All beams & cover plates in spans 1,2 & 3 shall conform to the requirement for welding (A.S.T.M. A-373). All other steel shall be A-7.

The Quantity Structural Steel-Fabrication and Erection Include:

A7 Steel	21,946 lbs	Field painting	Lump Sum
A373 Steel	185,500 lbs	Shear Connectors	Lump Sum
Lead Plates	294 lbs		
Total	207,740 lbs	Structural Steel-Fab & Erection	

Work This sheet with Sheets 11 & 13

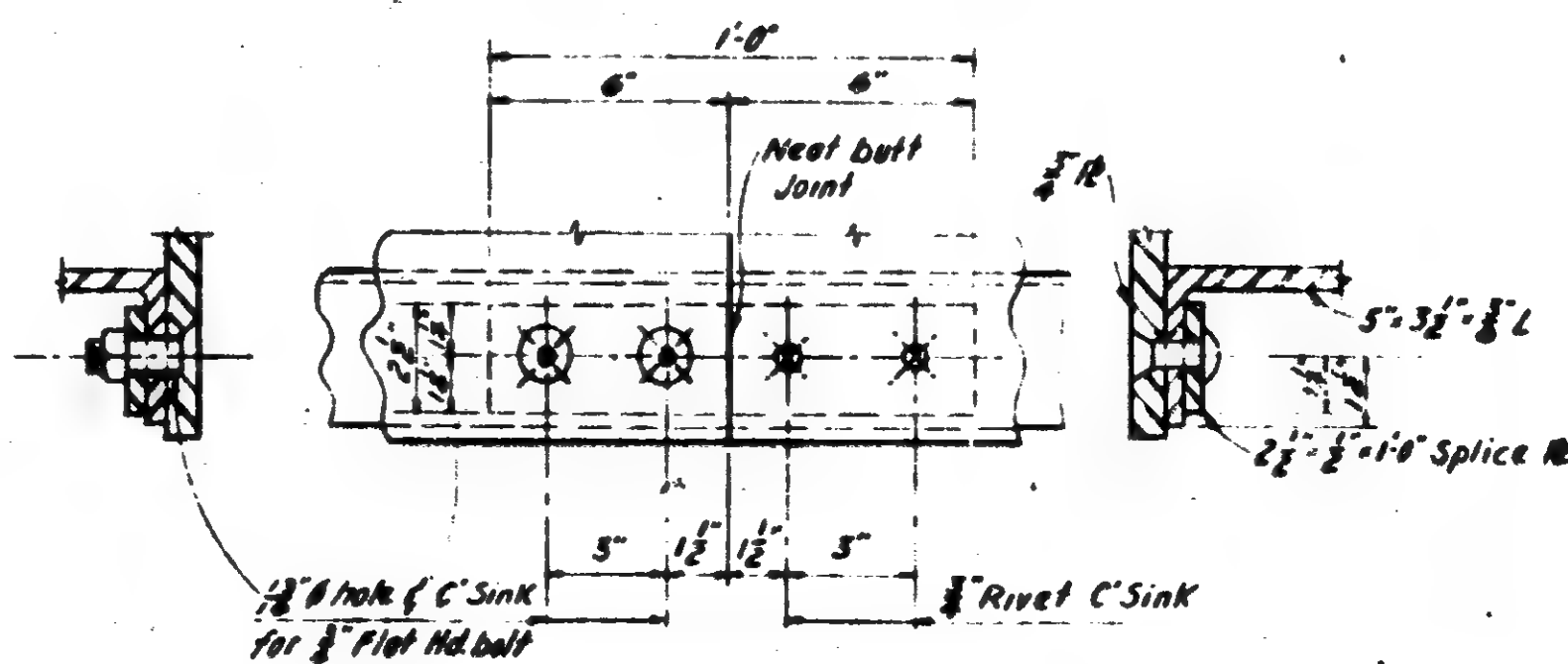
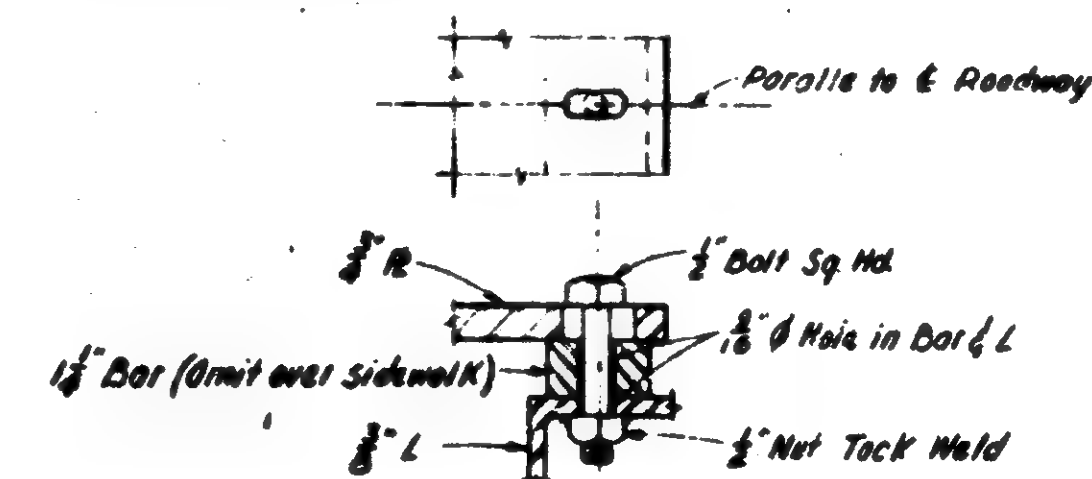
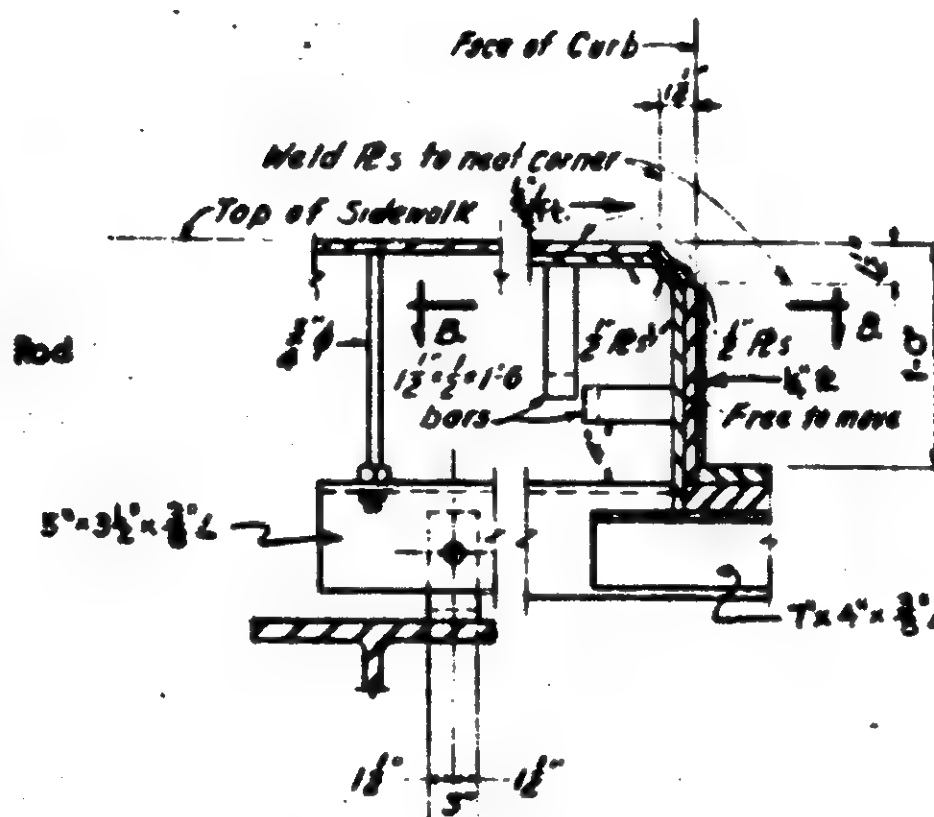
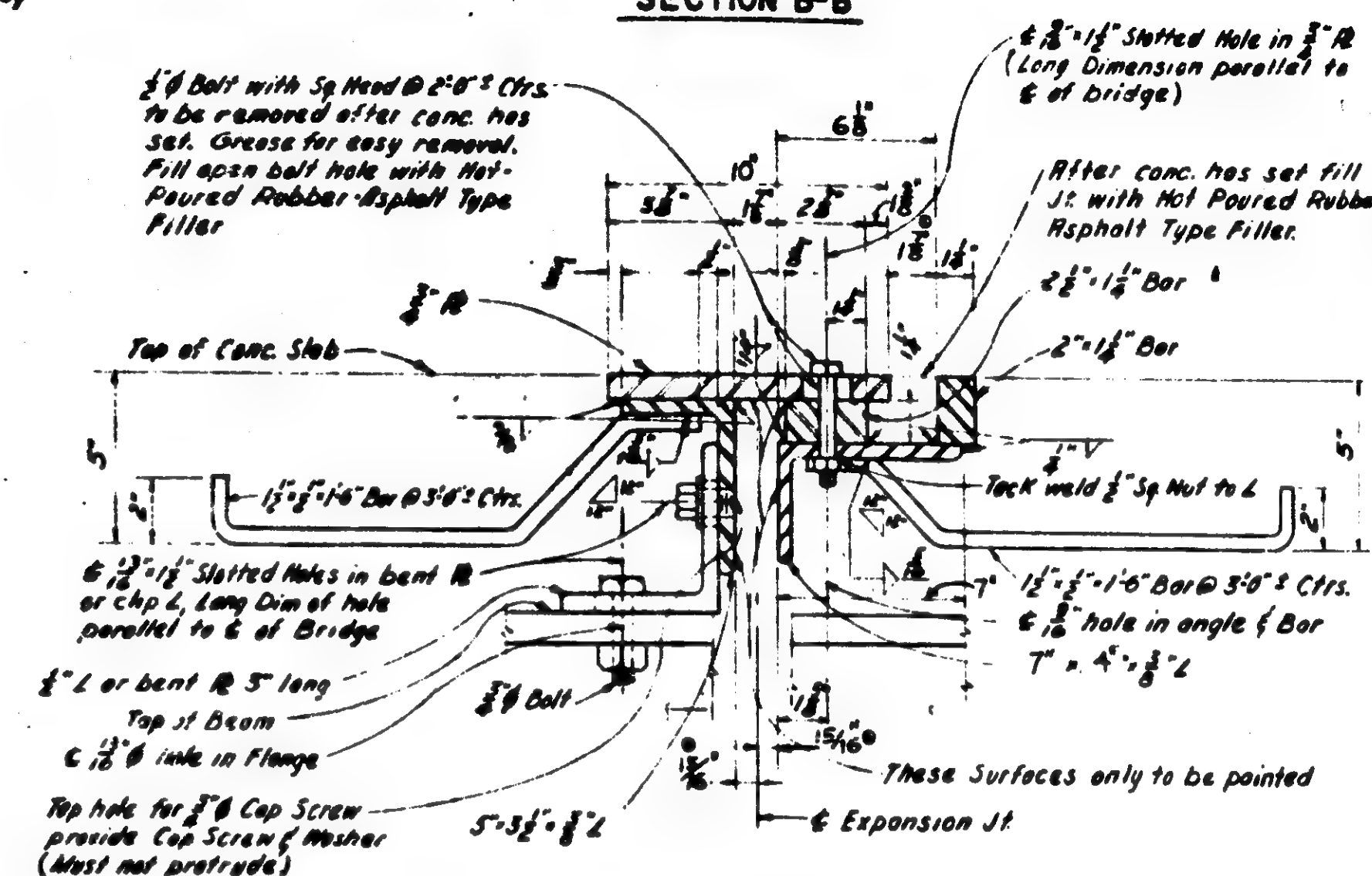
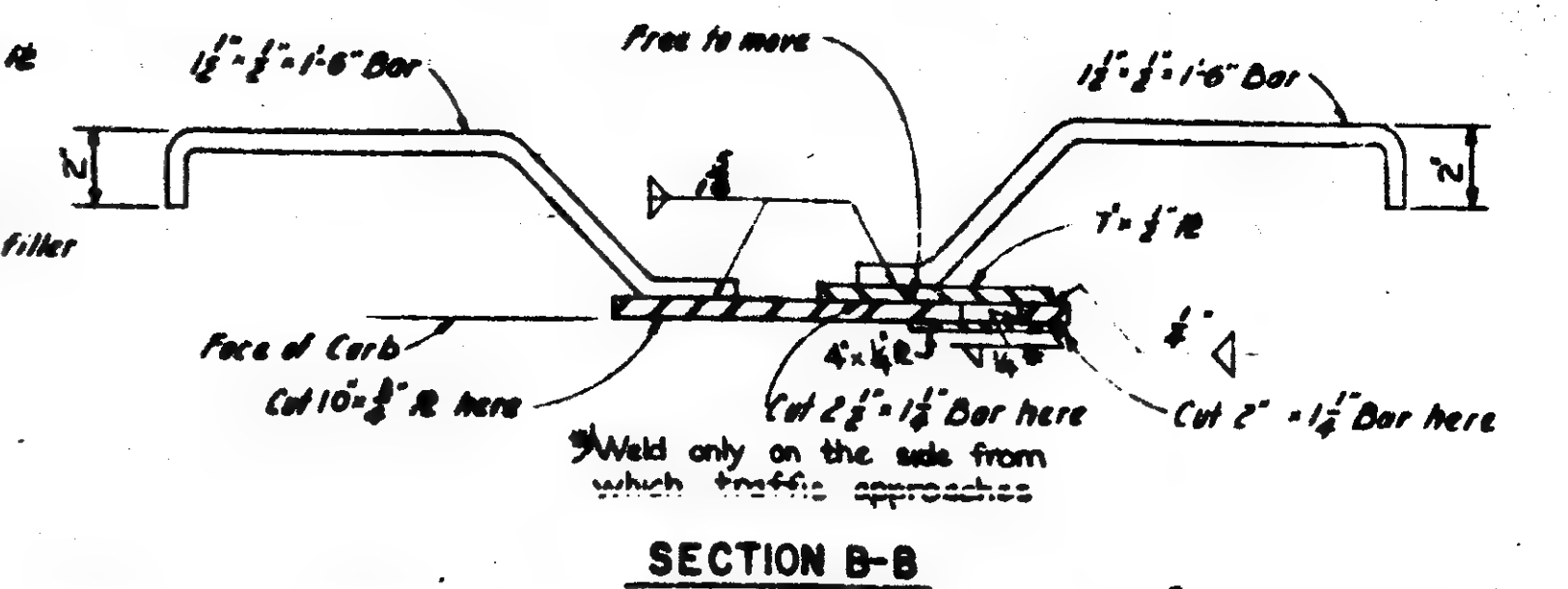
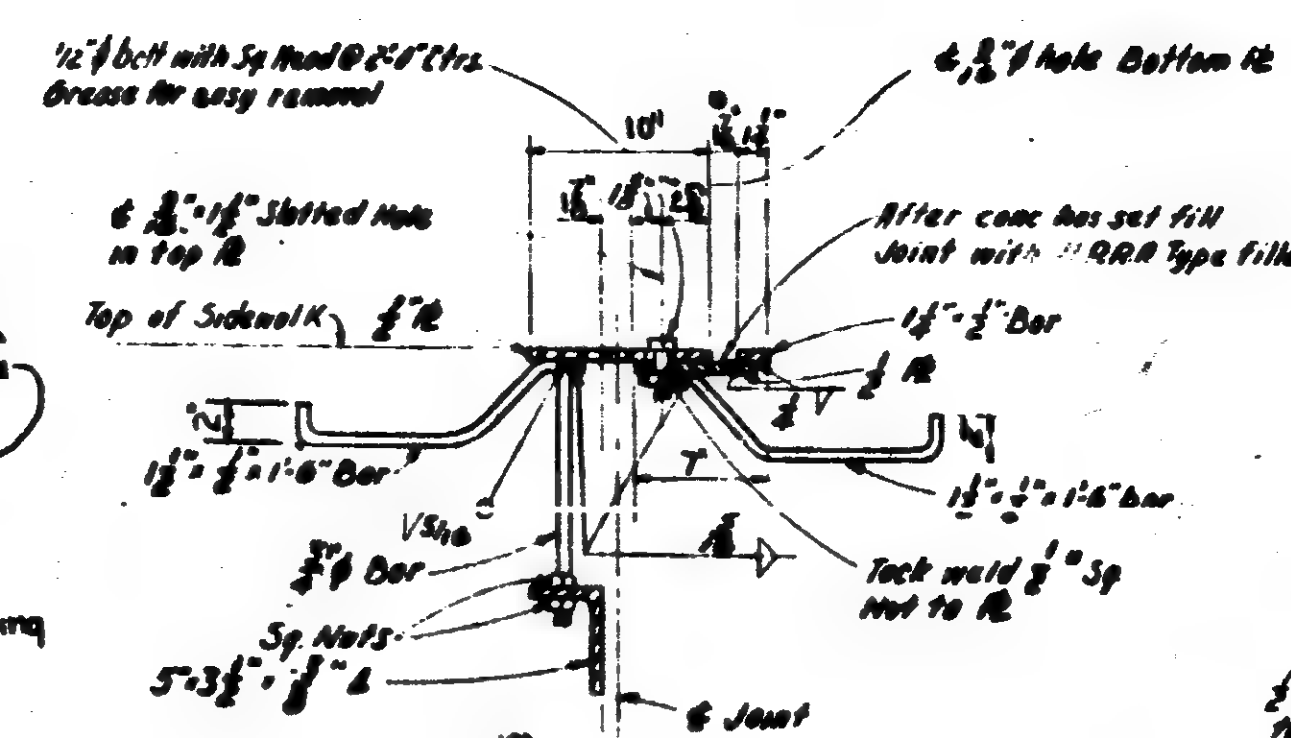
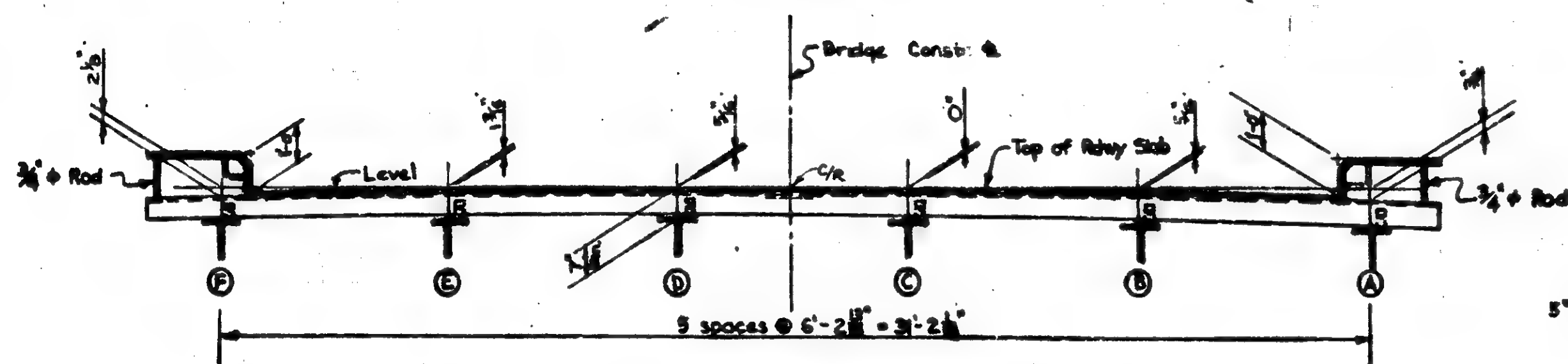
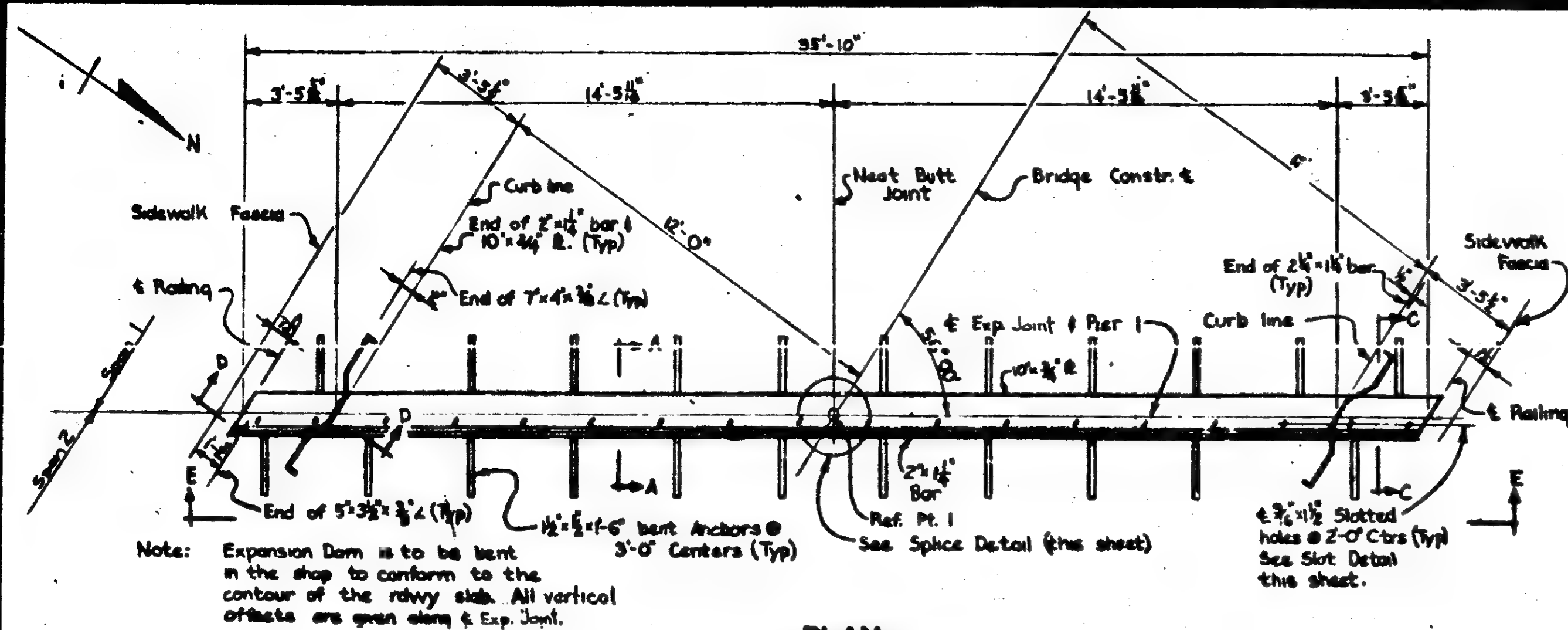
MICHIGAN STATE HIGHWAY DEPARTMENT

STRUCTURAL STEEL DETAILS

REGIONS			
NO	DESCRIPTION	DATE	BY

SQUAD BOSS	Russman	11-19-60
DRABE BY	F.O.C.	10-20-60
TRACED BY		
CHECKED BY	F.O.W.	11-17-60
SHEET 12 OF 14		
B1 OF 16-5-6		

B1 OF 16-5-6



Work This Sheet With Sheets No. 11 & 12

Note: Total weight of Expansion Dam = 2150 lbs (Included in weight of structural steel Fabrication & Erection - Sht. 12)

MICHIGAN STATE HIGHWAY DEPARTMENT

EXPANSION DAM DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED BY	REVISION
DRAWN BY	DATE
CHECKED BY	BY

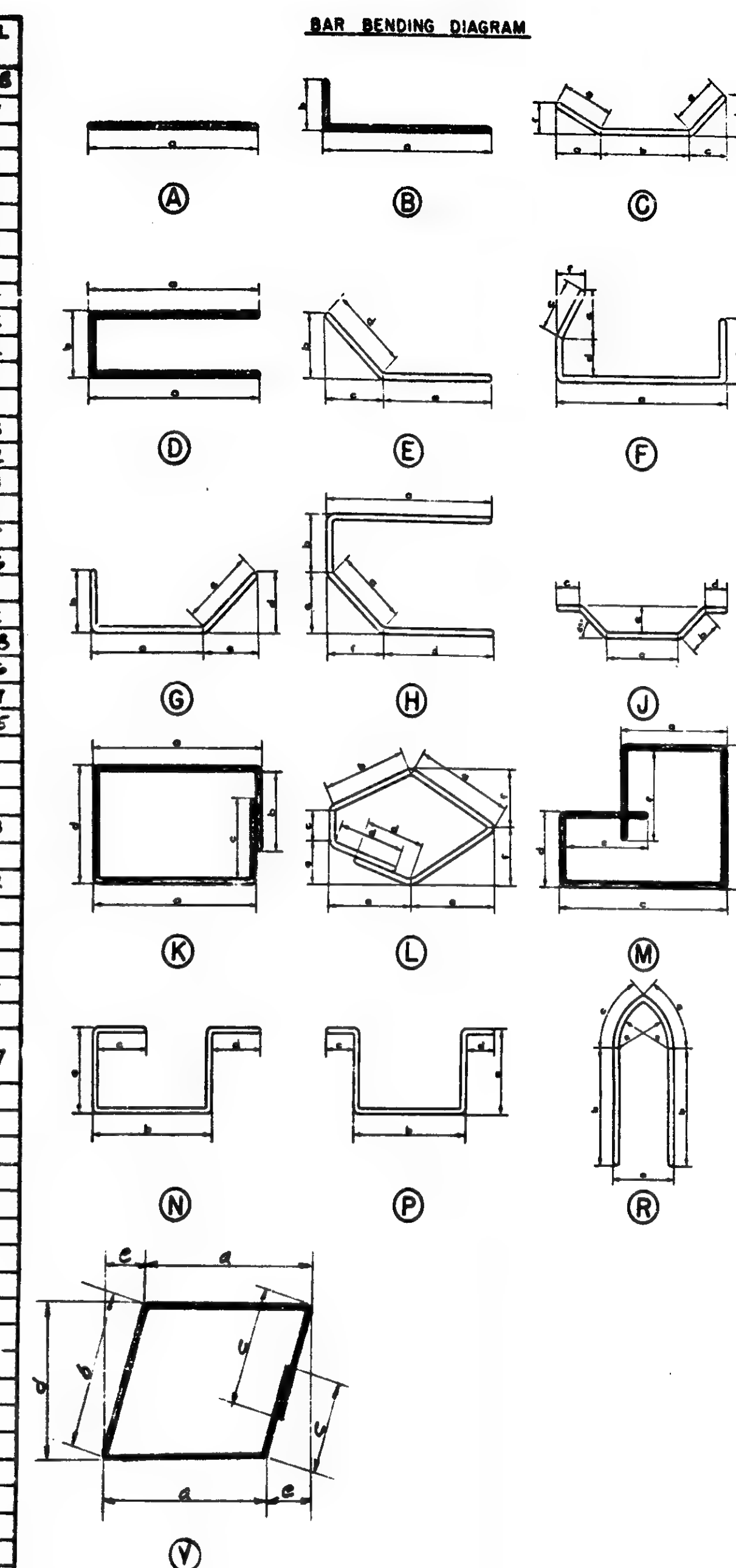
B1 OF 16-5-6

SD4 OF 16093 RN

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A1	4'-3"							6	4'-3"	90	574
A2	7'-0"							6	7'-0"	90	946
A3	34'-0"							6	34'-0"	20	1021
A4	33'-0"							6	33'-0"	20	991
A5	8'-3"							6	8'-3"	180	2230
A6	34'-0"							4	34'-0"	20	454
A7	33'-0"							4	33'-0"	20	441
A8	5'-3"							4	5'-3"	4	14
A9	11'-6"							4	11'-6"	8	61
A10	7'-0"							4	7'-0"	8	48
A11	5'-6"							4	5'-6"	8	29
D1	2'-3 1/4"	1'-0"						4	5'-6"	12	44
D2	3'-9 1/8"	1'-0"						4	8'-6"	18	68
D3	5'-6 1/4"	1'-0"						4	12'-0"	18	144
TOTAL STEEL IN ABUTMENTS 7085											

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A51	20'-0"							7	20'-0"	16	1308
A52	40'-0"							9	40'-0"	16	2176
A53	8'-6"							6	8'-6"	74	945
A54	8'-6"							6	8'-6"	58	740
A55	14'-3"							9	14'-3"	38	2356
A56	33'-6"							6	33'-6"	4	201
A57	33'-6"							8	33'-6"	12	1078
A58	28'-0"							10	28'-0"	12	1446
A59	9'-6"							6	9'-6"	16	228
A60	5'-0"							9	5'-0"	48	916
B51	14'-3"	6'-0"						9	25'-3"	12	1030
K51	2'-0"	1'-6"	1'-6"	2'-0"				4	8'-9"	16	94
K52	1'-6"	1'-2"	1'-2"	1'-6"				4	6'-9"	16	72
K53	2'-6"	1'-5"	1'-5"	2'-0"				4	9'-9"	32	208
K54	2'-6"	1'-5"	1'-5"	2'-0"				4	9'-9"	52	339
V51	1'-8 1/2"	1'-8 1/2"	1'-3 1/4"	1'-7 1/4"	5 1/2"			4	7'-6"	32	160
TOTAL STEEL IN PIERS 13192											

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A101	24'-9"							4	24'-9"	819	15538
A102	36'-0"							4	36'-0"	20	481
A103	1'-9"							4	1'-9"	12	14
A104	3'-0"							4	3'-0"	12	24
A105	2'-3"							5	2'-3"	24	56
A106	3'-9"							5	3'-9"	24	94
A107	5'-3"							5	5'-3"	24	132
A108	6'-9"							5	6'-9"	24	169
A109	8'-3"							5	8'-3"	24	202
A110	9'-9"							5	9'-9"	24	244
A111	11'-3"							5	11'-3"	24	282
A112	12'-9"							5	12'-9"	24	319
A113	14'-3"							5	14'-3"	24	357
A114	15'-6"							5	15'-6"	24	388
A115	17'-3"							5	17'-3"	24	432
A116	18'-6"							5	18'-6"	24	463
A117	20'-0"							5	20'-0"	24	501
A118	21'-9"							5	21'-9"	24	545
A119	23'-0"							5	23'-0"	24	576
A120	24'-6"							5	24'-6"	24	613
A121	26'-0"							5	26'-0"	20	542
A122	27'-6"							5	27'-6"	24	688
A123	29'-0"							5	29'-0"	24	726
A124	30'-0"							5	30'-0"	618	19337
A125	36'-3"							5	36'-3"	10	605
B101	3'-0 1/2"	9"						4	3'-9"	300	753
D101	6 1/2"	1'-6"						4	2'-6"	600	1082
K101	3'-2"	11 1/2"	11	1'-3 1/2"				4	6'-3"	8	33
M101	2'-2"	1'-3 1/2"	3'-2"	10"	1'-7"	1'-1"		4	10'-0"	40	267
TOTAL STEEL IN SUPERSTRUCTURE 43387											



Note:-
All right angle bends in Reinforcing Steel to be made about a pin of the minimum diameter allowed by the Standard Specifications.

Grand Total Steel Reinforcement 63,644 #

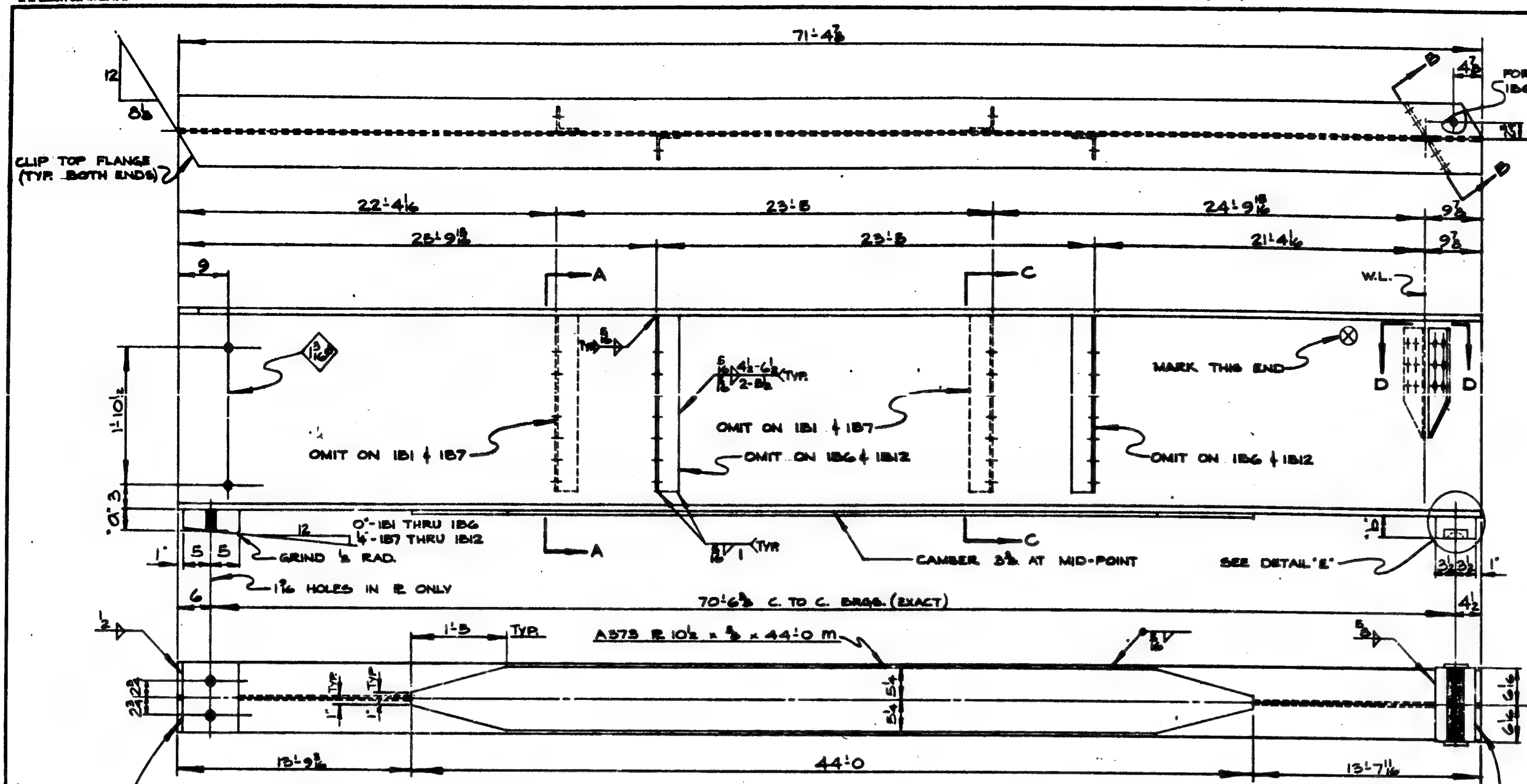
MICHIGAN STATE HIGHWAY DEPARTMENT

STEEL REINFORCEMENT DETAILS

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	As per 11-18-60	11-17-60	R.O.W.
2	As per 11-18-60	11-17-60	R.O.W.

Bl of 16-3-6

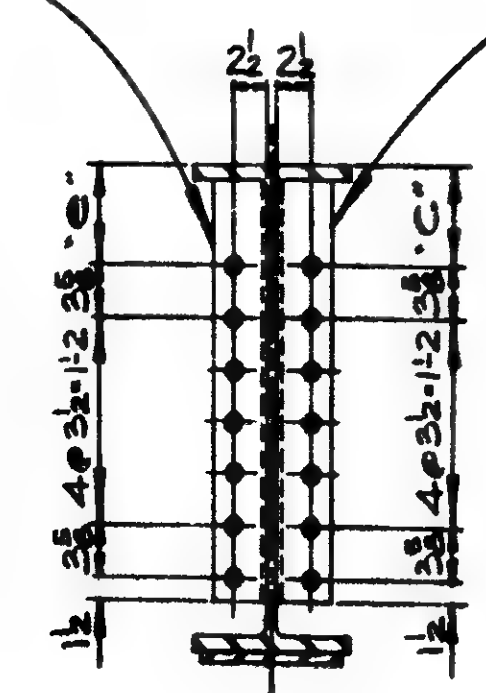


- E 10 x 2 1/2 x 0-11 1/2 P FOR IB1 & IB5.
 E 10 x 2 1/2 x 0-11 1/2 Y FOR IB2.
 E 10 x 2 1/2 x 0-11 1/2 T FOR IB3.
 E 10 x 2 1/2 x 0-11 1/2 U FOR IB4.
 E 10 x 2 1/2 x 0-11 1/2 V FOR IB6.
 E 10 x 2 1/2 x 0-11 1/2 W FOR IB7.
 E 10 x 2 1/2 x 0-11 1/2 Z FOR IB9.
 E 10 x 2 1/2 x 0-11 1/2 AA FOR IB10.
 E 10 x 2 1/2 x 0-11 1/2 AB FOR IB11.
 E 10 x 2 1/2 x 0-11 1/2 AC FOR IB12.

E 7 x 2 1/2 x 1-0 1/2 ad FOR IB1.
 E 7 x 2 1/2 x 1-0 1/2 ag FOR IB2.
 E 7 x 2 1/2 x 1-0 1/2 af FOR IB3.
 E 7 x 2 1/2 x 1-0 1/2 ag FOR IB4.
 E 7 x 2 1/2 x 1-0 1/2 ah FOR IB6 & IB7.
 E 7 x 2 1/2 x 1-0 1/2 ai FOR IB9 & IB10.
 E 7 x 2 1/2 x 1-0 1/2 ak FOR IB11.
 E 7 x 2 1/2 x 1-0 1/2 am FOR IB12.

12 BEAMS REQ'D. AS SHOWN & NOTED (A373 33WF 130.0 x 71'-4 1/2) MK. IB1 THRU IB12, INCL.
 (ONE BEAM OF EACH MARK.)

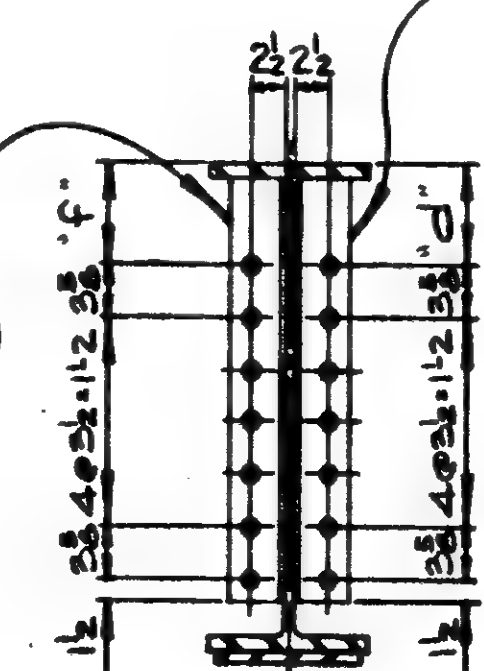
- L 4 x 4 x 3/8 x 2'-4 1/2 ba⁵ FOR IB1, IB2, IB7, & IB9.
 do x 2'-4 1/2 bb⁵ FOR IB3 & IB9.
 do x 2'-5 1/2 bc⁵ FOR IB4 & IB10.
 do x 2'-5 1/2 bd⁵ FOR IB5.
 do x 2'-5 1/2 be⁵ FOR IB11.



SECTION A-A

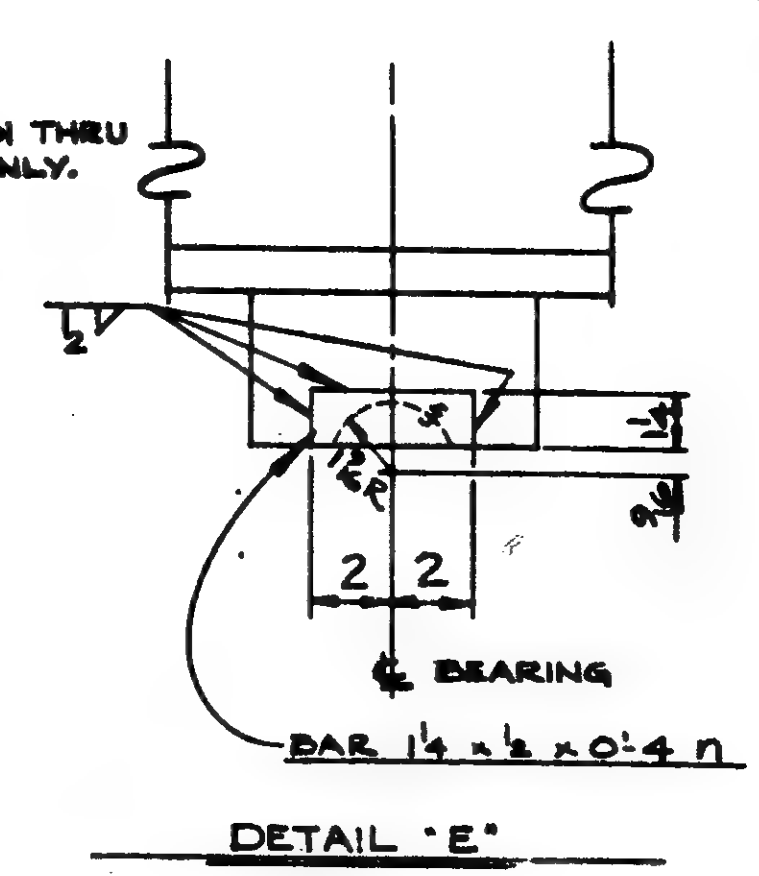
- L 4 x 4 x 3/8 x 2'-4 1/2 ba⁵ FOR IB1, IB2, IB7, & IB9.
 do x 2'-4 1/2 bb⁵ FOR IB3 & IB9.
 do x 2'-5 1/2 bc⁵ FOR IB4 & IB10.
 do x 2'-5 1/2 bd⁵ FOR IB5.
 do x 2'-5 1/2 be⁵ FOR IB11.

- L 4 x 4 x 3/8 x 2'-4 1/2 ba⁵ FOR IB1, IB2, IB7, & IB9.
 L 4 x 4 x 3/8 x 2'-4 1/2 bb⁵ FOR IB3 & IB9.
 do x 2'-5 1/2 bc⁵ FOR IB4 & IB10.
 do x 2'-5 1/2 bd⁵ FOR IB5.
 do x 2'-5 1/2 be⁵ FOR IB11.

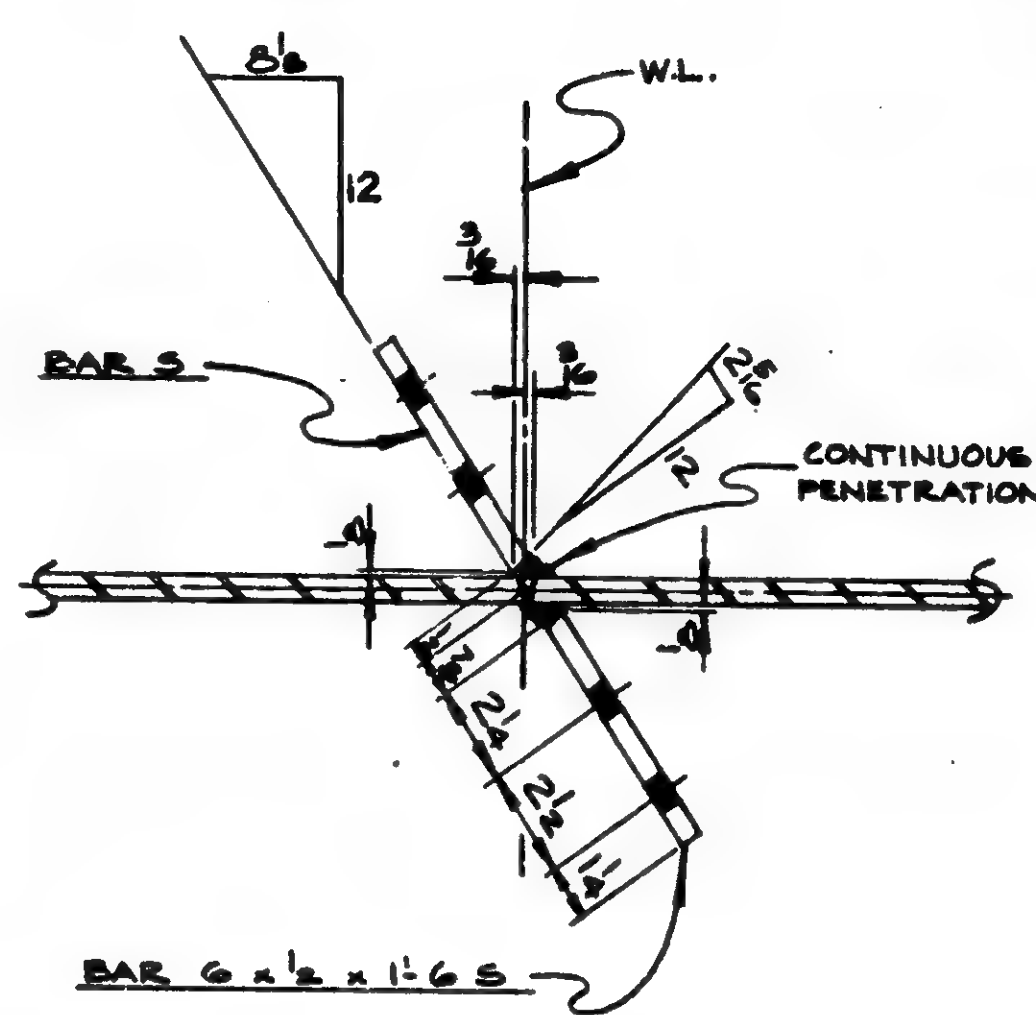


SECTION C-C

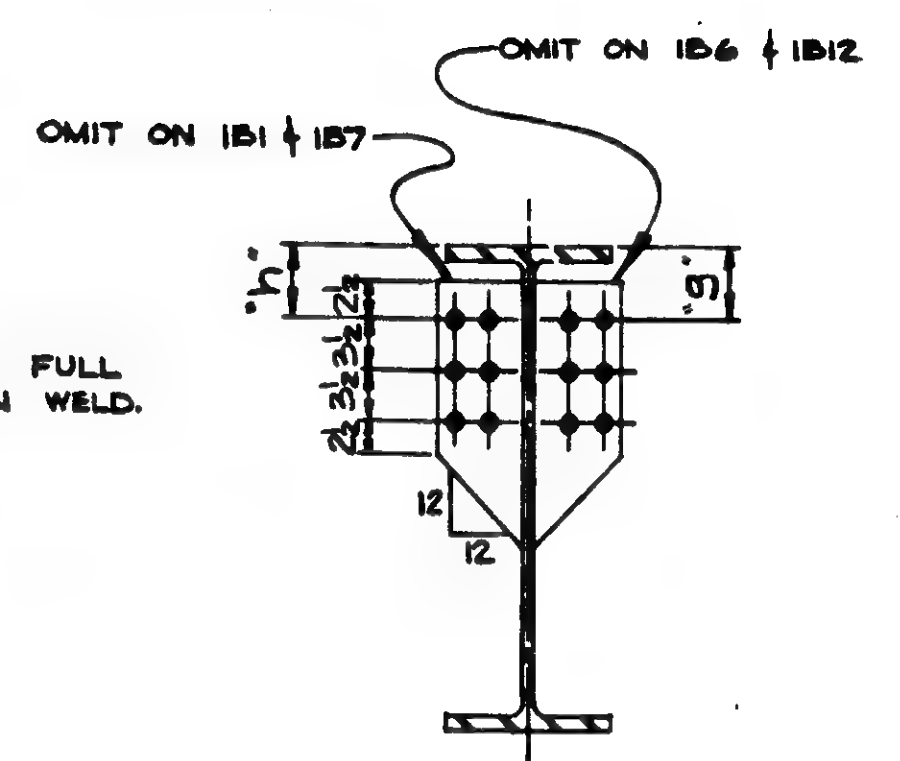
- L 4 x 4 x 3/8 x 2'-4 1/2 ba⁵ FOR IB1, IB2, IB7, & IB9.
 L 4 x 4 x 3/8 x 2'-4 1/2 bb⁵ FOR IB3 & IB9.
 do x 2'-5 1/2 bc⁵ FOR IB4 & IB10.
 do x 2'-5 1/2 bd⁵ FOR IB5.
 do x 2'-5 1/2 be⁵ FOR IB11.



DETAIL 'E'



SECTION D-D



SECTION B-B

	a'	b'	c'	d'	e'	f'	g'	h'
IB1	2 1/2	3 1/2	6 3/4	6 3/4	7 1/2	7 1/2	4 1/2	4 1/2
IB2	2 1/2	3 1/2	6 3/4	6 3/4	7 1/2	7 1/2	4 1/2	4 1/2
IB3	3 1/2	4 1/2	7 1/2	7 1/2	6 3/4	6 3/4	5 1/2	5 1/2
IB4	3 1/2	4 1/2	7 1/2	7 1/2	6 3/4	6 3/4	5 1/2	5 1/2
IB5	2 1/2	3 1/2	6 3/4	6 3/4	7 1/2	7 1/2	4 1/2	4 1/2
IB6	2 1/2	3 1/2	6 3/4	6 3/4	7 1/2	7 1/2	4 1/2	4 1/2
IB7	2 1/2	3 1/2	6 3/4	6 3/4	7 1/2	7 1/2	4 1/2	4 1/2
IB8	3 1/2	4 1/2	7 1/2	7 1/2	6 3/4	6 3/4	5 1/2	5 1/2
IB9	4 1/2	5 1/2	8 1/2	8 1/2	7 1/2	7 1/2	6 3/4	6 3/4
IB10	5 1/2	6 3/4	9 1/2	9 1/2	8 1/2	8 1/2	7 1/2	7 1/2
IB11	5 1/2	6 3/4	9 1/2	9 1/2	8 1/2	8 1/2	7 1/2	7 1/2
IB12	5 1/2	6 3/4	9 1/2	9 1/2	8 1/2	8 1/2	7 1/2	7 1/2

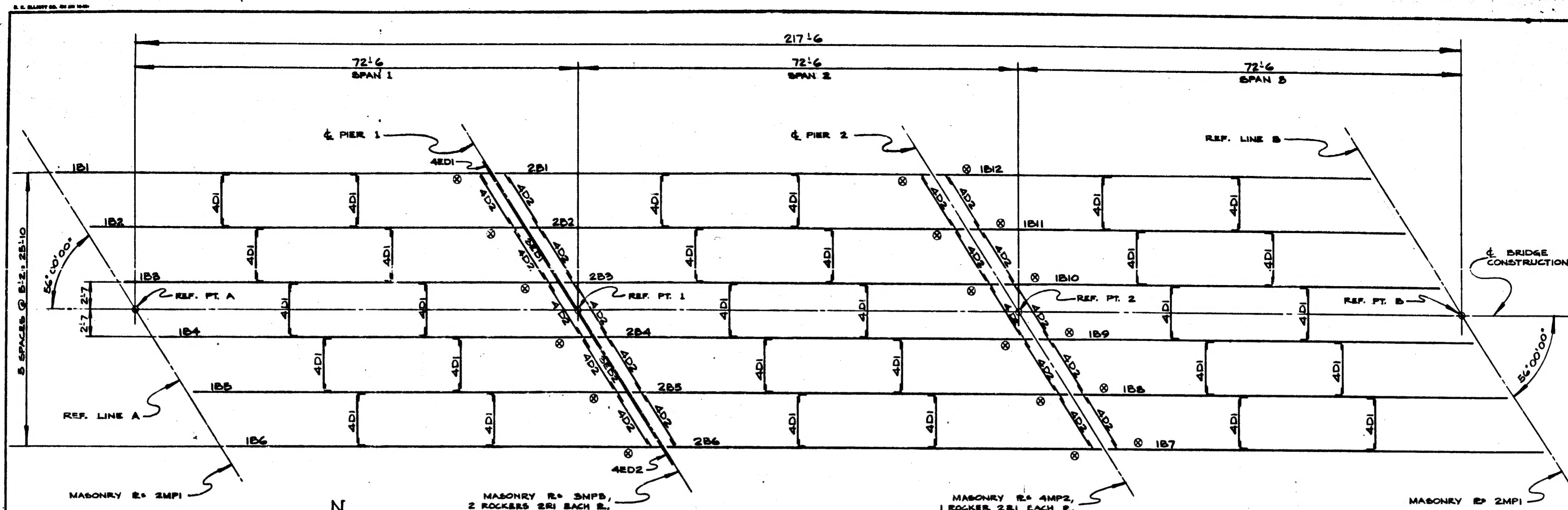
FIELD BOLTS

- 315- 3/4 x 0-2 HEX HD, HEX NUT HIGH-STRENGTH BOLTS.
 252- 3/4 x 0-2 1/2 do, do do - do do.
 126- 3/4 x 0-2 1/2 do, do do - do do.
 126- 3/4 HARDENED FLAT STEEL WASHERS.
 24- 1 1/4 x 1 1/4 SQ. HD, HEX NUT MACH. BOLTS.
 24- 1 1/4 BAR x 1 1/2 (POSITION DOWELS).
 24- 3 x 3 x 1/4 R WASHERS (FOR 1 1/4 BOLTS).
 6- 3/4 x 0-2 1/2 SQ. HD, SQ. NUT MACH. BOLTS.
 2- 3/4 x 0-2 1/2 CTGK. HD, HEX NUT MACH. BOLTS.

SHOP NOTES

OPEN HOLES 1/2" UNLESS OTHERWISE NOTED.
 PAINT SHOP COAT M.S.H.D. IN RED LEAD EXCEPT AS FOLLOWS:
 TOP SURFACE OF TOP FLANGE OF ALL BEAMS TO BE COATED
 WITH BOILED LINDSEED OIL ONLY; TOP SURFACE OF MASONRY
 PLATES, BOTTOM SURFACE OF SOLE PLATES & TOP & BOTTOM
 SURFACES OF ROCKERS SHALL BE COATED WITH TALLOW
 MIXTURE ONLY; NO PAINT ON CONTACT SURFACE OF ALL
 DIAPHRAGM CONNECTIONS; PAINT EXPANSION DAM AS NOTED.
 ALL BEAMS & COVER PLATES SHALL CONFORM TO THE
 REQUIREMENTS FOR WELDING (A.S.T.M. A573), ALL OTHER
 STEEL SHALL BE A7.
 ALL BEAMS SHALL BE CAMBERED 3/8" ± 1/4" AT MID-POINT.
 CAMBER TO BE MEASURED WITH BEAM IN UPRIGHT
 POSITION, SUPPORTED ON BEARINGS, AFTER ALL FABRICATION
 IS COMPLETED.

REVISION				F. YEAGER BRIDGE & CULVERT COMPANY	
NO.	DESCRIPTION	DATE	BY	1701 KEARNEY ST. - PORT HURON, MICH.	
				BRIDGE B1 OF 16-B-6, C1	
				175 (US27 RELOC.) N.E. CROSSING RONDO	
				ROAD, 3.6 MILES N.E. OF WOLVERINE,	
				CHEBOYGAN COUNTY.	
				MICHIGAN BRIDGE CONSTRUCTORS, CONT'D.	
				DATE 3-20-61	JOB NO. R 21210
				BY JAM	SHEET 1 OF 4

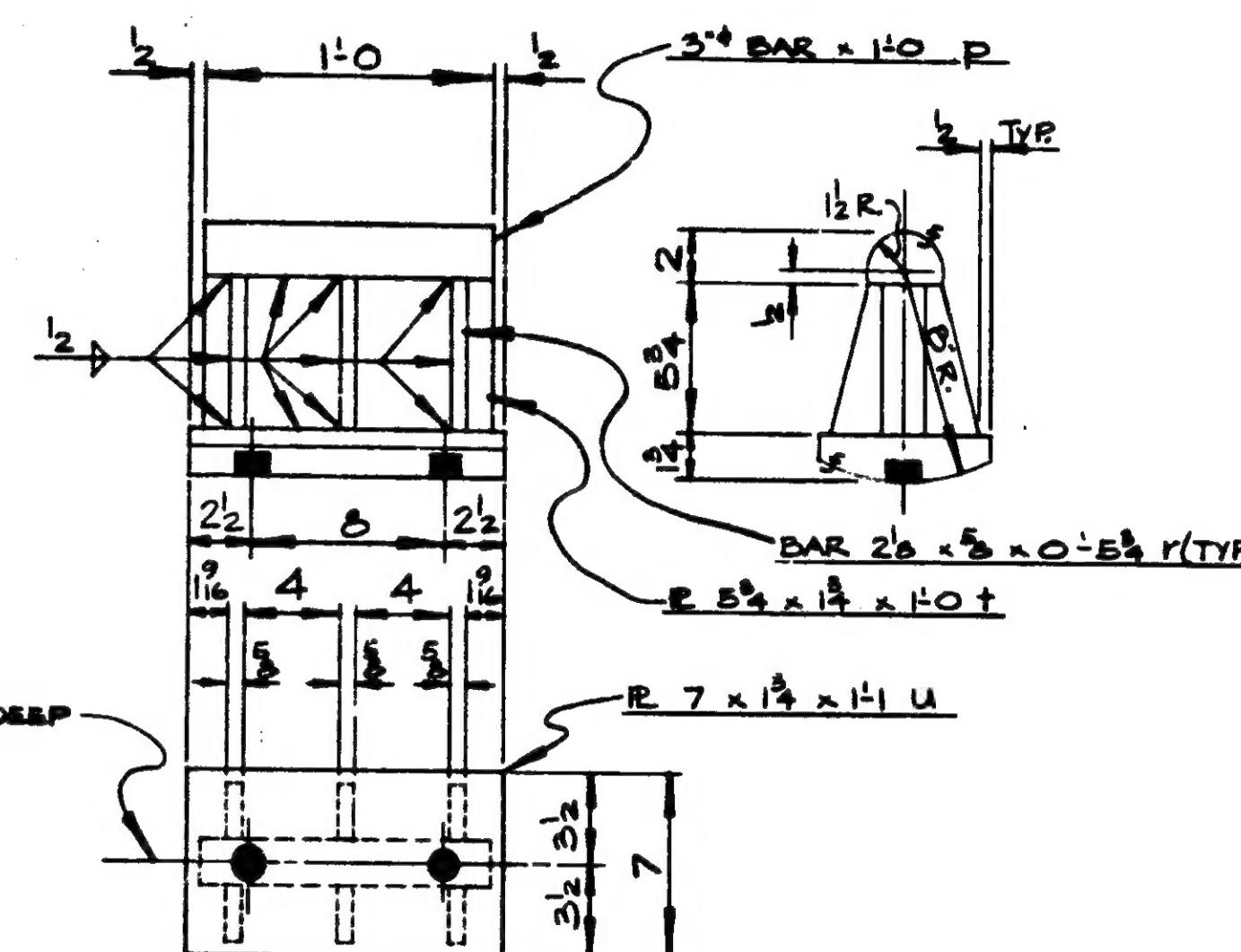
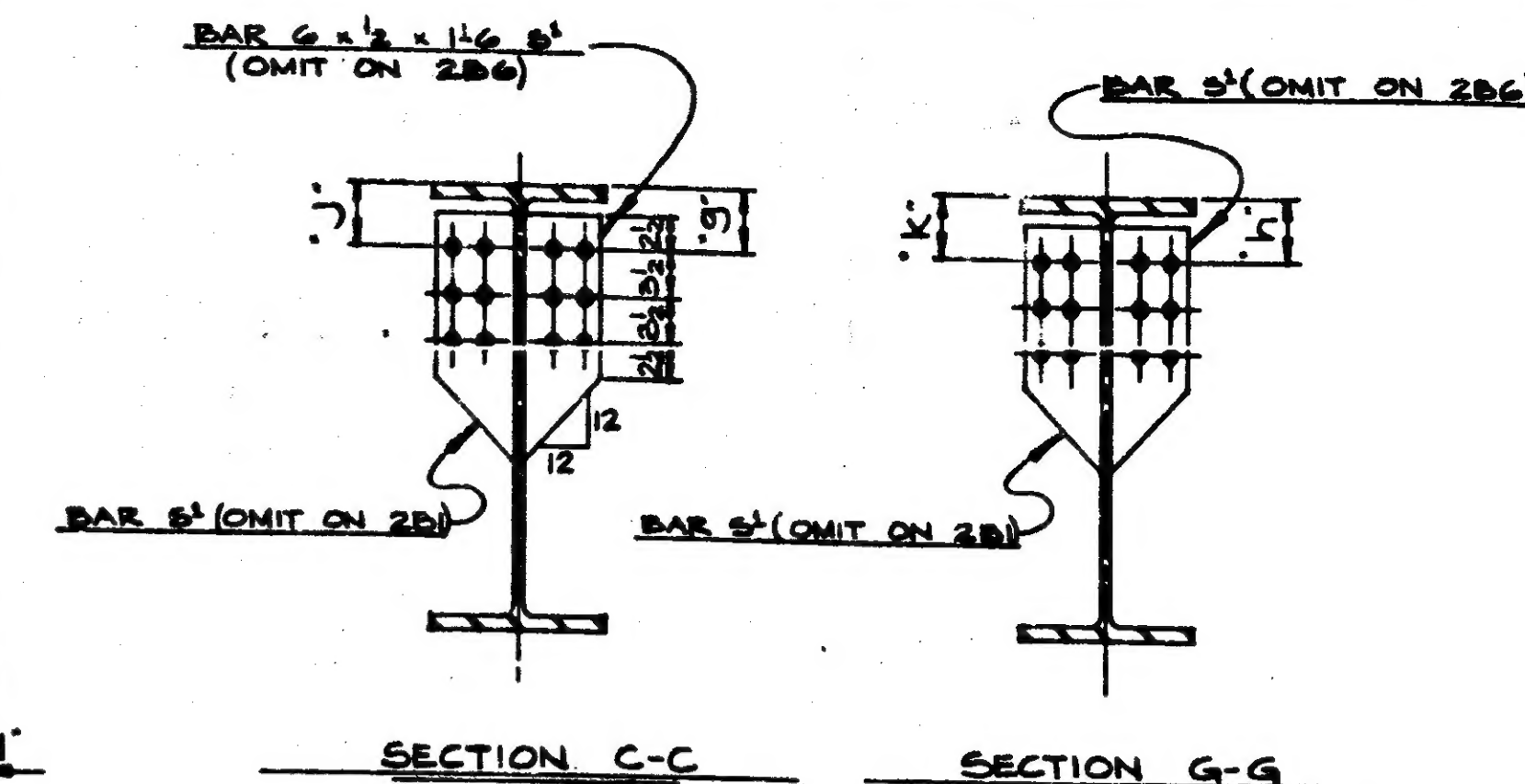


ERECTION DIAGRAM

REVISION			
NO.	DESCRIPTION	DATE	BY

F. YEAGER BRIDGE & CULVERT COMPANY 1701 KEARNEY ST. — PORT HURON, MICH.		
BRIDGE B1 OF 16-5-6, C1 I75 (US27 RELOC.) N.B. CROSSING RONDO ROAD, 3.6 MILES N.E. OF WOLVERINE, CHEBOYGAN COUNTY.		
MICH. BRIDGE CONSTRUCTORS, CONT'R.		
DATE 3-26-61	JOB NO. R 21210	SHEET E1
BY JAM		

	'a'	'b'	'c'	'd'	'e'	'f'	'g'	'h'	'j'	'k'
2B1	3 ₂	4 ₃	6 ₃	6 ₃			4 ₂	4 ₃		
2B2	3 ₂	4 ₃	6 ₃	6 ₃	7 ₄		4 ₂	4 ₂		
2B3	4 ₆	5	6 ₁₀	6 ₃	6 ₃	7 ₄	4 ₃	5	5 ₆	4 ₃
2B4	3 ₃	4 ₂	7 ₁₀	7 ₃	6 ₃	6 ₁₀	5 ₃	5 ₃	4 ₂	4 ₂
2B5	2 ₃	3 ₆	7 ₃	6 ₁₀	6 ₃	6 ₃	5 ₆	5 ₃	4 ₂	4 ₂
2B6	2	2 ₄			6 ₃	6 ₃			4 ₂	4 ₂



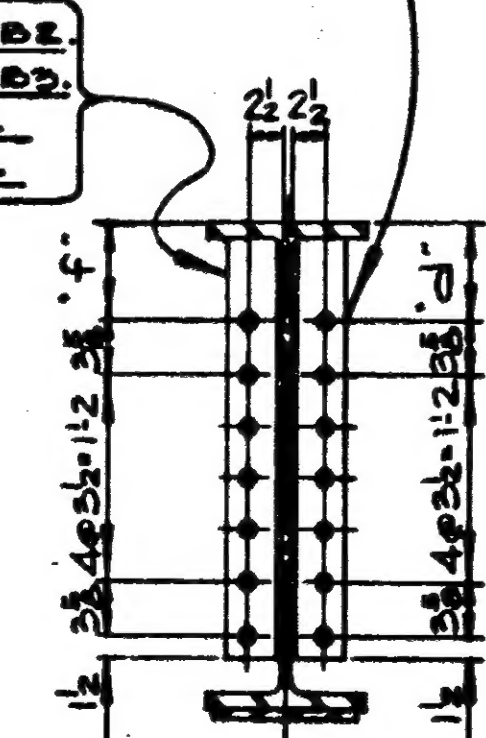
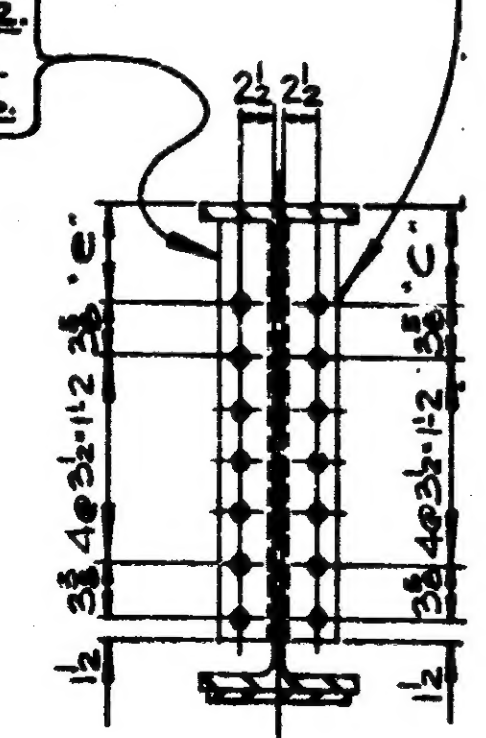
6 BEAMS REQ'D. AS SHOWN & NOTED (A.S.T.M. A373 33WF130 x 72 1/4) MK. 2B1 THRU 2B6, INCL.
(ONE BEAM OF EACH MARK.)

$$\begin{array}{l} L \ 4 \times 4 \times 2^2 \times 2^1 4^5 \ b a^2 \text{ FOR } 2B1 \downarrow 2B \\ d_o \quad \times 2^1 4^1 b g^5 \text{ FOR } 2B3. \\ d_o \quad \times 2^1 5^1 b c^5 \text{ FOR } 2B4. \\ d_o \quad \times 2^1 3^1 b f^5 \text{ FOR } 2B5. \end{array}$$

L baf¹ FOR 2B1, 2B2, & 2B3.
L baf¹ FOR 2B4.
L baf¹ FOR 2B5.

$L 4 \times 4 \times 2^3 \times 2^{-4} \ln 2^2$ FOR 2B2.
 $L b f b^2$ FOR 2B3.
 $L b a b^2$ FOR 2B4, 2B5 + 2B6.

$L 4 \times 4 \times 2^5 \times 2^5 b d^5$ FOR 2B2.
 $\quad \times 2^5 5^4 b p$ FOR 2B3.
 $\quad L b g^5$ FOR 2B4.
 $\quad L b a^5$ FOR 2B5 & 2B6.



Hand-drawn technical drawing of a mechanical part, likely a bracket or support. The drawing includes the following dimensions and features:

- Top Horizontal Dimensions:**
 - Total width: $2'-0\frac{3}{16}$
 - Distance from left edge to center of hole: $1'-9\frac{11}{16}$
 - Radius of hole: $\frac{5}{2}$
- Left Vertical Dimension:**
 - Height from bottom edge to center of hole: $R\ 12\frac{1}{2} \times \frac{1}{2} \times 2'-0\frac{3}{16}$
- Right Vertical Dimensions:**
 - Distance from top edge to center of hole: $1'-0\frac{1}{2}$
 - Distance from center of hole to bottom edge: $3\frac{1}{2}$
 - Distance from center of hole to right edge: $5\frac{1}{2}$
- Internal Features:**
 - A diamond-shaped hole with a diameter of $1\frac{1}{2}$.
 - Two circular holes, each with a diameter of $3\frac{1}{2}$.
- Note:** "TALLOW N.S." with an arrow pointing to the left side of the part.

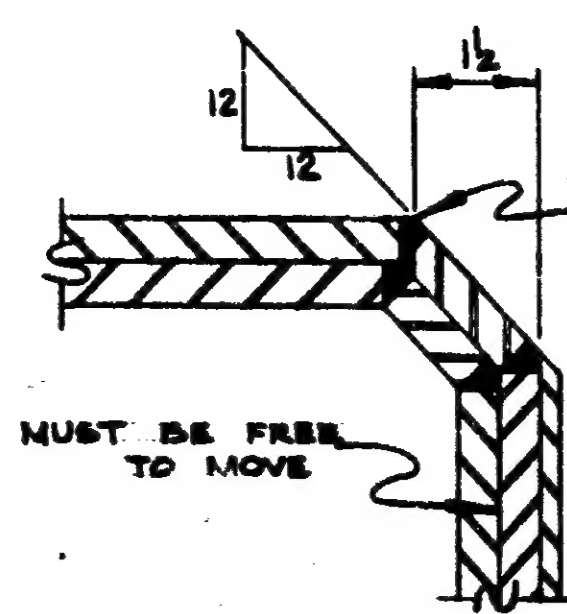
SHOP NOTE : WORK THIS
SHEET WITH SHEET 1.

12 MASONRY PLATES REQ'D. AS SHOWN - MK. 2MP

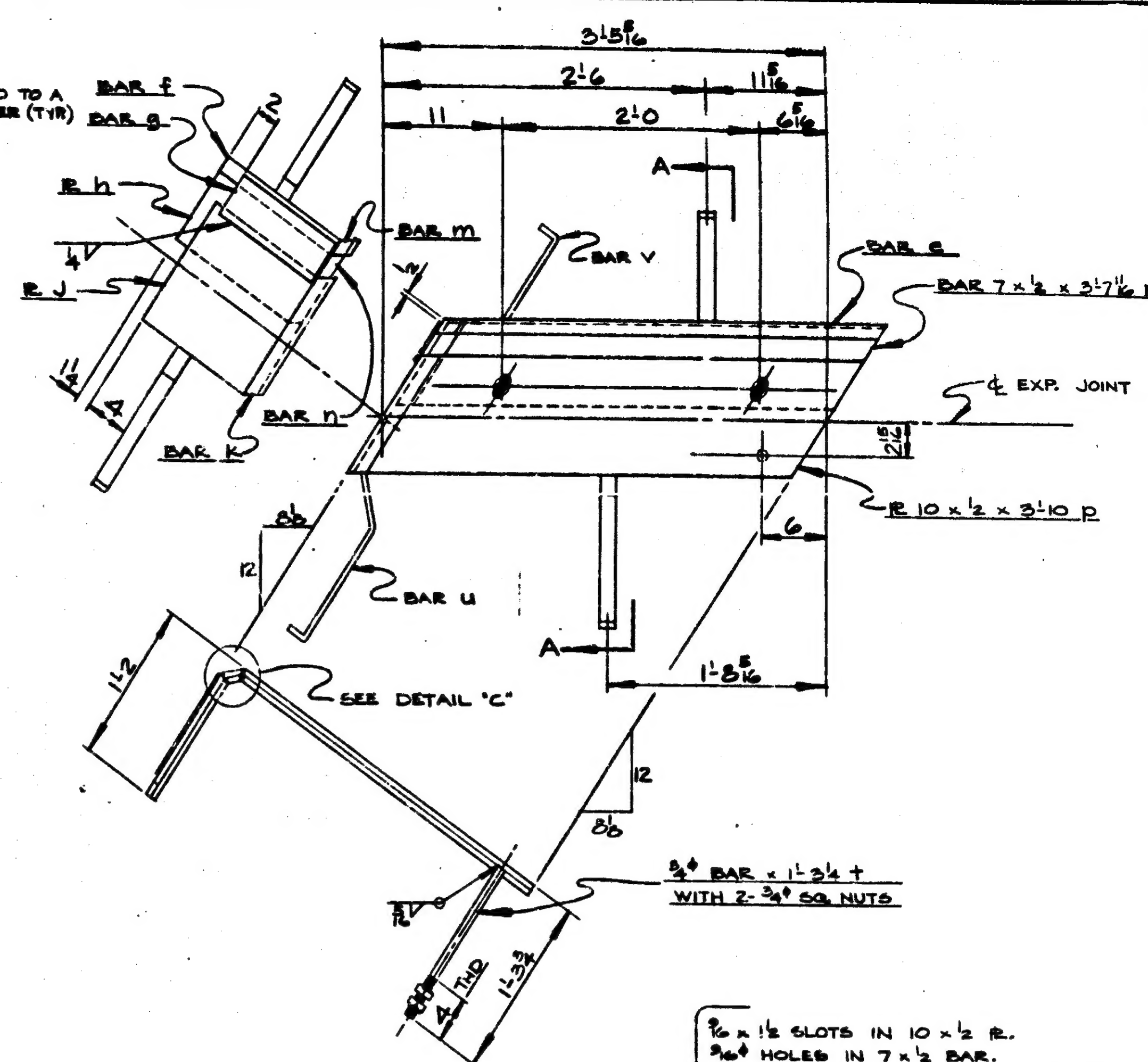
REVISION				F. YEAGER	
NO.	DESCRIPTION	DATE	BY	BRIDGE & CULTVERT COMPANY	
				1701 KEARNEY ST. — PORT HURON, MICH.	
				BRIDGE B1 of 16-5-6,C1	
				I 75 (US27 RELOC.) N.D. CROSSING RONDO	
				ROAD, 3.6 MILES N.E. OF WOLVERINE,	
				CHEBOYGAN COUNTY.	
				MICH. BRIDGE CONSTRUCTORS, CON'T'R.	
				DATE 5-22-61	JOB NO.
				BY JAM	DWBT
				R 21210	2 of 4



504 of 16092 R



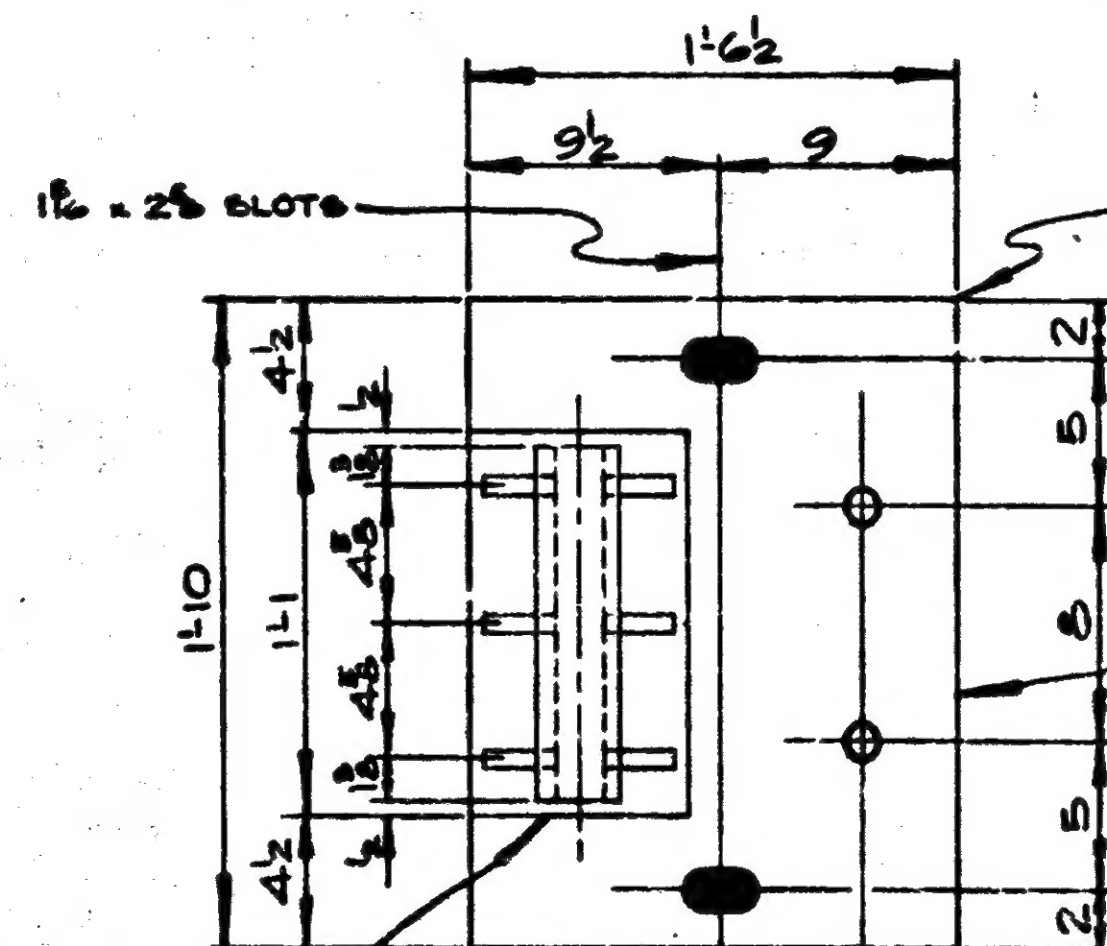
DETAIL 'B'-AS SHOWN
DETAIL 'C'-OPP. HAND



$\frac{9}{16} \times \frac{1}{2}$ SLOTS IN $10 \times \frac{1}{2}$ R.
 $\frac{3}{16}$ HOLES IN $7 \times \frac{1}{2}$ BAR.
 $\frac{1}{4} \times \frac{1}{4}$ EH, EN. M. BOLT WITH FL WASHER
 TACK WELD NUT TO $7 \times \frac{1}{2}$ BAR.
 GREASE BOLTS FOR EASY REMOVAL.

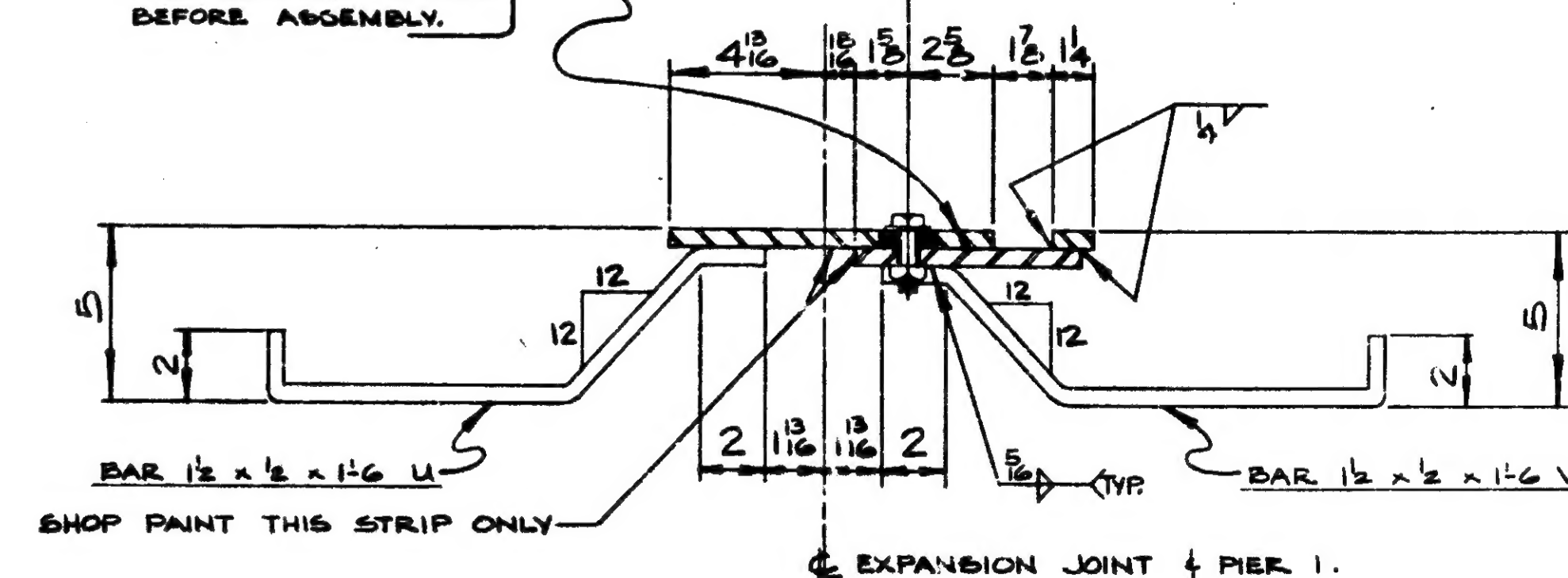
ONE EXPANSION DAM REQ'D. AS SHOWN-MK. 4EDD

ONE EXPANSION DAM REQ'D. AS SHOWN-MK. 4ED2



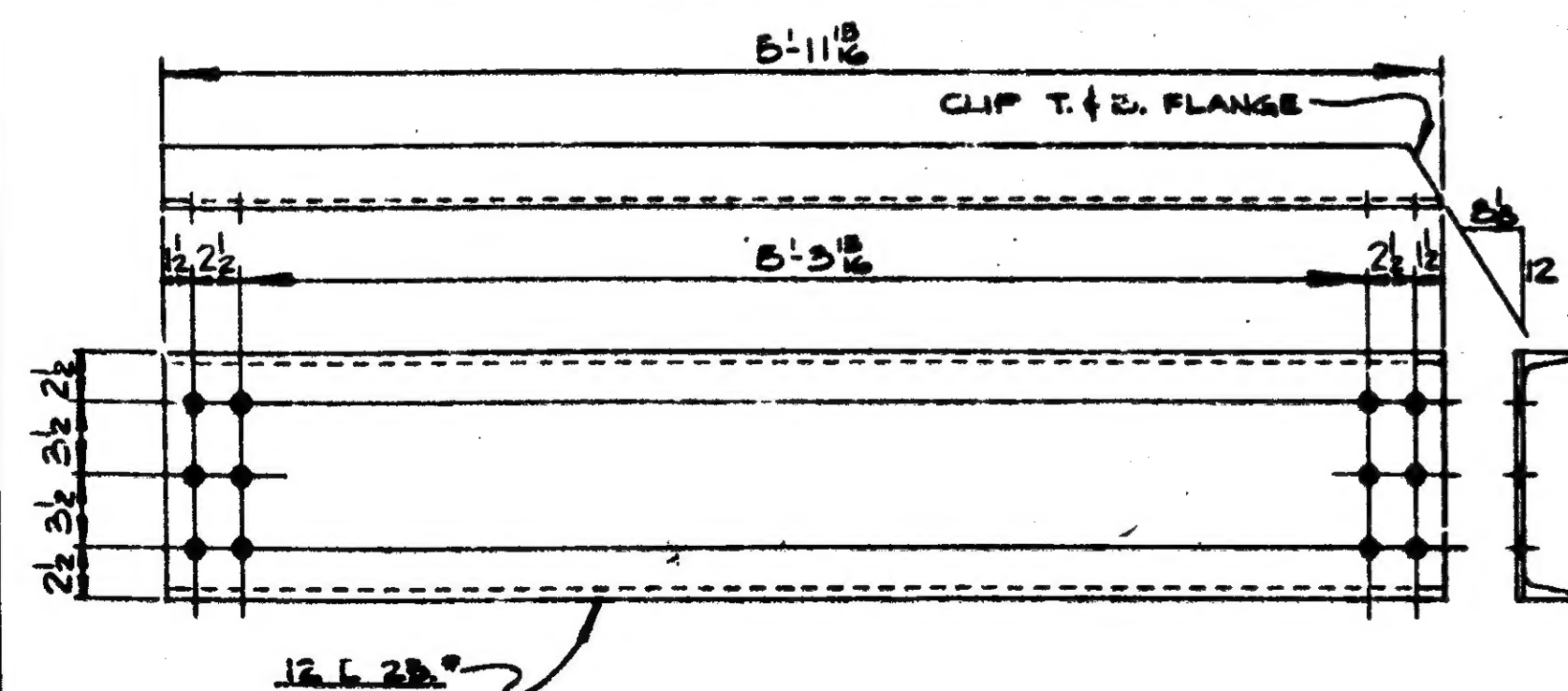
APPLY A $\frac{1}{16}$ " COAT OF BITUMINOUS MASTIC TO THIS SURFACE IN SHOP BEFORE ASSEMBLY.

MARK THIS
EDGE "EAST"

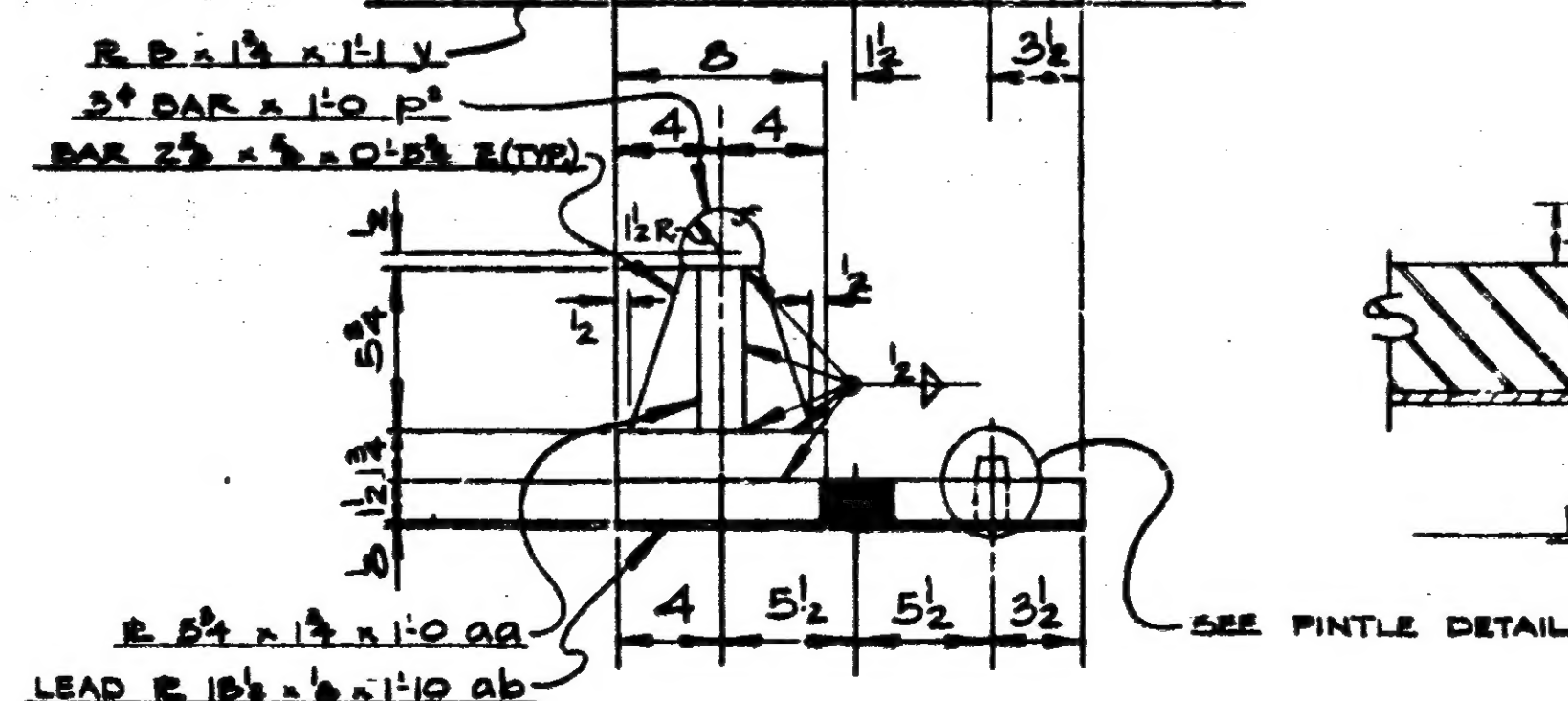


EXPANSION JOINT & PIER 1.

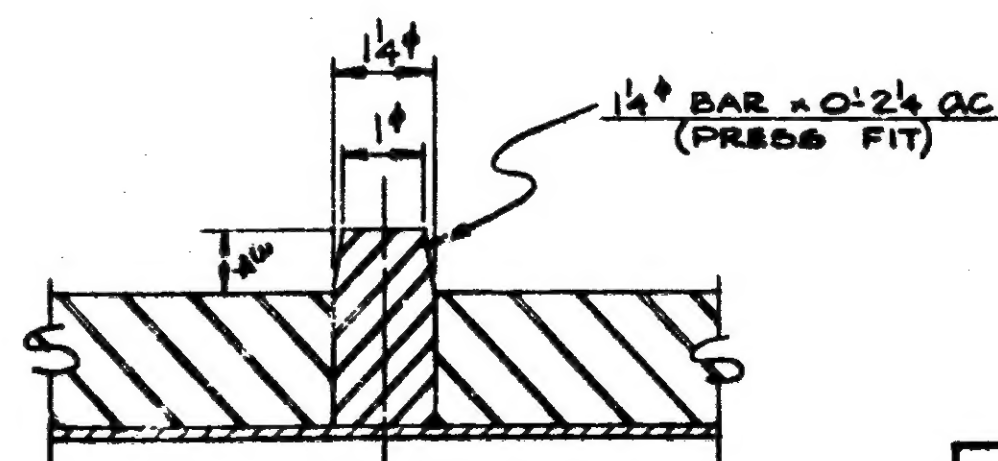
30 DIAPHRAGMS REQ'D. AS SHOWN - MK. 4DI



20 DIAPHRAGMS REQ'D. AS SHOWN - MK. 4D2



6 MASONRY PLATES REQ'D. AS SHOWN IN 4MP2



PINTLE DETAIL

SECTION A-A

REVISION				F. YEAGER	
NO.	DESCRIPTION	DATE	BY	BRIDGE & CULVERT COMPANY	
				1701 KEARNEY ST. — PORT HURON, MICH.	
				BRIDGE B1 of 16-B-6, C1	
				I7B (US27 RELOC.) N.B. CROSSING RONDO	
				ROAD, 3.6 MILES N.E. OF WOLVERINE,	
				CHEBOYGAN COUNTY.	
				MICH. BRIDGE CONSTRUCTORS, CONT'R.	
				DATE 3-24-61	JOB NO.
				BY JAM	R 21210
					SHEET 4 OF 4

S 04 of 15673 RE